Gleanings in Bee Culture

This illustration shows a gigantic cake designed and executed by the monks of St. Mary's Abbey, Bucktast, Devon, England. It is in the form of a church. Forty pounds of honey were used in its construction. In the background are the abbey buildings.

The A. I. Root Co., Medina, O., U. S. A.

Entered at the Postoffice, Medina, Ohio, as Second-class Matter.

Vol. XXXV September 15, 1907 No. 18

GLEANINGS IN BEE CULTURE

Published by The A. I. Root Company, Medina, Ohio

E. R. Root, Editor A. L. Boyden, Advertising Mgr.
H. H. Root, Asst. Ed. J. T. Calvert, Business Mgr
A. I. Root, Editor of Home Department

Vol. XXXV. SEPTEMBER 15, 1907. No. 18

VERY SORRY to learn that *Europaeische Bienenzucht*, the champion of American methods of bee-keeping, has suspended publication. It was a good bee-journal.

FOR HONEY that is bottled, no matter who is the producer, why not have the label read "Bottled by"? [This phrase has not yet received official sanction. It is the most specific, though, of any of the phrases that have been thus far suggested.—ED.]

BRO. WHITNEY, the proposition to have control over a certain bee territory may be as ridiculous as you say, p. 1152, to you, who make bee-keeping a pastime. To some of us who depend on bees for our bread and butter it seems just as ridiculous as for a stock-raiser to control the pasturage for his cattle.

BENJ. A. FORD, p. 1141, succeeds in having queens fertilized in upper stories above excluders. I tried it in former years, and also again this year, with an entrance for each story, but with too many failures. I wonder why. [The trouble with the scheme of having queens fertilized over an upper story of a strong colony with perforated zinc between the two stories is that it fails nine times out of ten—so much so that it is not worth while to fuss with it. The only time it succeeds is during a natural honey-flow, or when bees are being fed liberally outdoors, inducing artificial conditions that approximate very closely a natural flow.—ED.]

AFTER READING about two laying queens invariably fighting to a finish when put together on the ground, p. 1068, I thought I would try it, as I had never done so on the ground. I put two laying queens together on the ground. They walked apart. As fast as they separated I pushed them together, and, although I could make them crawl over one another, I could not succeed in arousing the least degree of hostility. I tried the same thing with another pair, and the result was the same. I wonder what was different in Mr. Bender's case. [Mr. Bender possibly tried younger queens. Suppose next time you take a couple of hybrids not more than six months old and then see what they will do. Mr. Morrison says he has had them fight repeatedly just as Mr. Bender states. Possibly you did not wait long enough.—ED.]

ONE YEAR, as I have reported, I gave a colony entirely drone comb, and they swarmed out. Joseph Trojan reports, in *Bienen Vater*, better success. June 8, 1906, he threw an after-swarm on drone comb. No drone brood appeared—all worker. The workers reared in drone cells were easily distinguished from the older workers. They were not longer, but thicker. In spring, 1907, a frightful quantity of drone brood appeared until the end of May, when worker brood returned. Trojan argues from this that all eggs are fertilized, and that the workers remove the spermatoza when they wish the eggs to produce drones. But he says nothing about the mouth of the drone-cells being narrowed. By the way, I found this week in a weak nucleus, with a queen that had laid not more than three days, eggs in a patch of drone-cells. The mouths of the cells were properly narrowed. [You seem to assume that bees will *invariably* narrow the openings of drone-cells whenever worker eggs are laid therein. Are you not mistaken?—ED]

I HAVE introduced many a queen by merely putting her in the hive without any caging; and I have lost many a queen when she was caged not more than 24 hours. On the whole, one may feel safer about a queen in general if she remains in the hive about three days before being let out of the cage. Here is my plan for having her released automatically in about that length of time: Take a piece of foundation-splint—that is, a

piece of wood about $\frac{1}{16}$ inch square—and a little longer than the tube of candy in the introducing-cage, and push the stick centrally through the candy. The bees will do the rest. When I first tried this, I expected the bees to gnaw the stick out of the way. They don't gnaw it. In some way they manage to work their way through and throw the stick out in the cage; but it takes them about three days to do it. The candy-tube is about $\frac{1}{4}$ inch in diameter. With a tube big enough for two bees to work at a time the time would be shorter; and with a tube sufficiently large the stick would make no difference whatever. [We have introduced a good many queens, and are doing it to-day, without caging; but our own experience has shown us that, for the beginner at least, it is better to cage, keeping the queen confined at least three days. Your scheme of delaying the passage of the bees to her majesty is a good one.—ED.]

IN CONFIRMATION of what the editor says about alsike, p. 1145, I may say that in this region, although alsike-fields are comparatively scarce, yet specimens of alsike are getting to be quite common along the public roads. Sorry to say that I have never been able to find many bees on my field of alsike this year. [But say, doctor, why don't you furnish alsike seed at half price—or, better still, free for one season, to nearby neighbors? It may cost you forty or fifty dollars, but you will find that your neighbors will flock to you for seed. We think, further, that you will find that thereafter they will be willing to pay you half price, and, later on, put it in of their own accord, paying full price for it. While there is not a million in this proposition to you, there is more in it than you may think. Then in the fall of the year you may encourage the farmers to put in buckwheat. If you could only be sure of a good buckwheat year you could afford to give them the seed for nothing until they get in the notion of raising it In the giving of free seed it is important to stipulate certain conditions—that it must not be thrown on top of bare ground, but sown along with other seed, as, for example, timothy. The farmers will soon catch on to the fact that alsike mixed with timothy makes the very finest of hay. They have learned that trick to a great extent in Michigan, and that is why, apparently, Michigan of late years has been able to furnish white-clover honey in bad years when other States have not been able to furnish any.—ED.]

I ASKED in a Straw, page 1008, "Suppose two queens are introduced at the same time, either in two cages or in the same cage, will not the bees accept both?" Notwithstanding the cold-watery character of the editor's reply I thought I'd try it. August 16 I put into the same cage two queens of the vintage of 1904, making them fast so the bees could not release them. Six days later I found one queen dead in the cage, the other living. I have had old queens die thus when alone in the cage, so it is not entirely certain whether there was a duel or not. But I had also, August 16, put two other 1904 queens in the same cage, fast, and given them to a strong nucleus, No. 69. August 20 I found both alive in the cage, and removed the covering to the candy, so that the bees could liberate them. August 22 I found the bees had eaten out the candy, and a number of the workers were in the cage along with the two queens, which seemed to be quite comfortable where they were, and had not cared to leave the cage. I let them out and closed the hive. That's the last I've seen of them, and it is now August 26. If you'll wait just a few minutes I'll go down to the hive, investigate, and report just what I find. . . . . Well, the first frame I took out contained an incomplete comb, and the bees had built some fresh drone comb in which were eggs, but no eggs in the worker-cells. The next comb contained sealed brood, worker eggs, and—a virgin! I set that frame to one side, and on the next comb I found a clipped queen. I set that frame to one side also. On the next comb I found the other clipped queen. I wanted to throw up my hat; but my veil was pinned down, and if I had taken it off I'd have been badly stung, so I thought better of it, put back the comb with the laying queen, removed the virgin, and hurried back to finish this Straw and to brag over my success.

Now, the question is whether this is one case of success to 99 of failure, or whether there will be only one failure in 100. I have another case under headway over at the Wilson apiary, which I'll be able to report in the next number. [Your experiment is a very interesting one, doctor, and no wonder you felt like throwing up your hat. Then when you come to ask us the question whether this is the one case of success out of 99 failures we hardly know what to say. According to the law of chance you would not have happened to hit upon the first trial—the only case of success. We prefer to wait for your further experiments before giving judgment. There are some new things that we have not yet learned about introducing, and the relation of queens to bees, and of queens to each other. It is probable that nature has been doing a lot of things, and it remains now for us only to inquire.

This whole question is a very interesting one, and we shall be glad to hear from others, especially queen-breeders who would be in position to test this matter.—ED.]

Honey reports from the Southeast are very encouraging in those sections where the main flow comes during the summer, and the flow is heavier in most locations than we have ever known it. The flow with us is about twice as heavy as in previous years. Shipments of honey from Florida are coming into the Georgia markets, and our crop from cotton will soon be ready for market.

Cordele, Ga., Sept. 5. J. J. WILDER.

THE Australian bee-keepers are making an effort to have free sites for apiaries provided for in forest reserves. We think this is no more than right, as a bee-keeper on a forest reserve would be a sort of guard against fires, and, besides, does no harm to and takes nothing from the forest. If the government went to some expense to plant trees particularly suited to bees, then it seems to us the bee-keeper should pay a rental for exclusive rights, but thus far no government has done this.

A PURE-FOOD LAW IN GREAT BRITAIN.

THE British House of Commons has passed the pure-food bill introduced by Mr. Burns, and now we learn it has passed the House of Lords unanimously. Contrary to the general impression, Great Britain has not legislated against imitation foods as we have, the tendency being to get cheap food if possible. France has a strong law on the subject, and Dr. Wiley has just returned from there after making a detailed examination of the French system of food inspection.

THE WOLF IN SHEEP'S CLOTHING.

A CONCOCTION of 90 per cent of glucose and 10 per cent of cane syrup has recently been placed on the market, which has evidently been collected by some variety of long-tongued bees; for on the label, which is a brilliant affair, are beautiful sprays of red clover as large as life. The man who conceived this label has a very vivid imagination to say the least. He fails, however, to state on the label just how the corn syrup is extracted from the red clover. This is not labeled "honey-drips" any more, but just plain "syrup."

DANDELION MALIGNED AGAIN.

"UNCLE HUGH," in the *Wisconsin Agriculturist*, classes the dandelion with ragweed, common thistle, burdock, purslane, pigweed, dodder, and plantain. Evidently he has never studied the dandelion to any extent. If he will take the trouble to plant a patch of dandelions this fall, carefully planting it in rows, he will, early next season, have a supply of fodder or pasture second to none, and which, if fed to milch cows, will cause an increased flow of milk which will produce butter with a June color and flavor long before June has come. There is nothing cows like better. Only a few weeks ago dried dandelion roots were quoted at 15 cents a pound, and the *Hunter-Trader-Trapper* for September quotes them at that price. If the dandelion is a "weed" so is white clover, alsike, timothy, and other forage plants.

UNCLE SAM INVESTIGATING BEE PARALYSIS.

WE note by the California papers that J. M. Rankin, who is connected with the Division of Apiculture, U. S. Department of Agriculture, has made arrangements with F. M. Hart, county bee-inspector at Hanford, California, to make a thorough investigation of the disease known to bee-keepers as bee paralysis. It is said the disease is quite common in that county (Kings), so that there are many opportunities for studying it. It is further reported the yield of honey has been materially reduced by the disease of late in that section. We hope some remedy will be found for this trouble.

FINED FOR SELLING ADULTERATED HONEY.

IN the Nashville *Evening Banner* for June 20 it is stated that a J. U. Phelan was fined by the court in that city $25.00 for selling adulterated honey, and that he was arrested by Meat and Food Inspector Blaine Danley, who had received complaints from two ladies about honey being bad. On investigation he decided to arrest Phelan. The latter, so it is said, stated he had sold such "honey" for a number of years, and never had a complaint before. Judge Baker, who heard the case, decided that a fine would meet the ends of justice.

A few cases exactly like the foregoing would have an excellent effect on the honey market. We want similar prosecutions in all parts of the country.

THE ILLUSTRIOUS SON OF THE GREAT HUBER.

IT gives me pleasure to state that Dr. James Huber, a grandson of the illustrious Francis Huber, who so thoroughly revolutionized our conception of honey-bee life, has been appointed Director of the Goeldi Museum of Para, Brazil, in succession to Dr. Emilio Goeldi, also a native of Switzerland, to which country he is returning. The latter has published some interesting monographs on the stingless bees of Brazil, also his brother. Dr. Huber, is a botanist. His father was a great authority on ants; and his grandfather the greatest authority on bees we know any thing of, and the inventor of movable combs. Evidently natural historians are born, not made to order.

HONEY GINGERBREAD IN FRANCE.

THE central society of the apiculturists in France, with its headquarters in Paris, has been trying to find out if it is actually true that only Brittany honey could be used in the manufacture of honey gingerbread, and have come to the reluctant conclusion that this is so. It ought to be understood this refers to buckwheat honey, which is the main stay of the bee-keepers of Brittany. The reason for this inquiry was, doubtless, the high prices paid by bakers for this honey,

for they dislike to use any other, and must have it. The center of the gingerbread trade is the city of Dijon, which uses something like 1000 fifty-gallon barrels per annum. The bakers claim no other honey will cause the bread to rise and remain light as buckwheat does. Some of the "patent" food companies in this country ought to take up the manufacture of this gingerbread, as it is evidently something good, for no one is a better judge of culinary affairs than the average Frenchman.

A CHANCE FOR BEE-KEEPERS IN NEW TERRITORY.

THE first irrigation government project open for use by the Reclamation Service of the United States was the Truckee-Carson system in Nevada. The town of Fallon occupies the business part of the project, so that it may be located on late maps. The land to be watered was practically all government land, subject to entry under the law. The amount of land under ditch is now about 200,000 acres; but this will be largely increased later by additional dams and canals.

Much of this land is still subject to entry, and the Department of the Interior is anxious that it be taken up at once. The government fees amount to $8.00 for 80 acres, which makes it cheap enough for any one. A tract of 40 acres will cost $6.50 Of course, the cost of water is additional, but that is distributed over ten years of time.

A good deal of the land has been taken up, and the desert has been transformed into a garden wherever the water has been turned on. The climate is said to be fine. The government is desirous of having the land settled quickly so as to make the money received for water available for other projects. The town of Fallon, which had 16 persons three years ago, now has 1000, and steadily grows. This land is peculiarly suited to bee-keepers, fruit-growers, and gardeners.

FIVE-BANDERS, AGAIN.

TWO of our subscribers protest against the black eye we have given the extra yellow or golden bees by stating that they were lacking in hardiness. One of them, Mr. G. W. Martin, of Stroudsburg, Pa., says he has kept five-banders since early in the 90's, and that his winter losses have been so small that it would make an incredible statement. Mr. E. E. Pressler has had the same experience; and not only that, but he finds that they are extra hustlers for honey.

We have tested a good many five-banded strains in our yard, and are very sorry to have to report that, while some of them are good honey-gatherers, exceptionally so, yet all of them seem to be about the first to go in winter or spring; while the darker strains of Italians, and especially Carniolans and Caucasians, seem to be able to stand the winter well.

It should be remembered that many of these extra yellow strains came from Southern Italy, while the leather-colored Italians came from Northern Italy, and the Alps, where the winters are severe. The Carniolans and Caucasians also came from cold climates, and for centuries back have been the survival of the fittest. It would be natural to suppose that a strain whose habitat is in localities where winters are severe would be able to stand our Northern winters better than a strain whose natural habitat is in a tropical climate.

ALSIKE CLOVER GROWING IN POPULARITY.

WE note with pleasure the statement made by the old reliable seedhouse of T. W. Wood & Son, of Richmond, Va., that alsike is growing in favor with the farmers of that section. They say that it lasts longer, is hardier, standing more adverse conditions of weather than ordinary clovers, and is better adapted to grazing purposes, and that it should be a constituent part of all grazing mixtures. This is in line with experience elsewhere. But alsike is most popular as a combination with timothy, in which case it furnishes very fine hay.

In this connection *The Farmer*, of St. Paul, Minn., comes to the defense of alsike clover against its detractors in other journals, claiming it will grow for a number of years without reseeding, and that it thrives on poorly drained, unprepared soils in the newer sections of the country. It also says:

> Then, too, in the timber districts where red clover grows extremely rank and coarse, the alsike variety has an advantage in that it has a finer stem, and consequently turns out a better quality of hay.

General experience will bear out the above statements, and it may pay some of our bee-keepers who reside in suitable localities to keep a supply of alsike seed on hand to be sold at low prices to near-by farmers. One of the reasons why farmers do not grow alsike is they can not get seed except at high prices.

HONEY MARKETS AND CROP CONDITIONS.

THE situation so far as crop conditions are concerned is about the same as reported in our last issue, except that there seems to have been a fair honey-flow in Texas, or at least parts of it, and a late flow in Florida. Later information seems to confirm the reports made in our last issue, to the effect that the aggregate crop for the country would be about the same as last year, which was a light one; but the very great scarcity of fruit, the general advance in food stuffs, and the effect of the new pure-food law, will make a strong demand for table honey, especially No. 1 and fancy comb. It is clear to us that some of our honey-merchants, at least, are not offering enough for these two grades; two of them, as will be noted, are offering 20 cts. We are satisfied from reports in hand that many bee-keepers are holding back their crops until the market shall feel the scarcity and offer better figures. Mr. Irving Cross, of Hoosick Falls, N. Y., commenting on the price offered for honey at Albany, N. Y., and in New York city, writes:

Now, this is less than what honey is selling for at Colorado and Pacific Coast points, and it does not seem favorable to rush honey on to the market here till the shortage has made itself felt, even though it seems to be the best plan to do so when the crop is normal. It is usually the way for the buyers of any crop to rustle around and get the bulk of the crop bought at the lowest possible figure and to advance it after the producer has sold out. One or two held on in this town last year till late and got their best prices at the last end of the season.

Unless the market for No. 1 and fancy comb shows up a little better, we can not censure the producers, who have these grades on hand, for not selling at the present time. But there is always danger in holding for a better figure. Our impression is that the producer can afford to wait a little. What little comb honey we can get—a precious little amount—we are retailing at 25 cents for fancy and 24 for No. 1. Talk about supplying the wholesale trade! why, we have not been able to get much if any comb honey to sell, even for a retail trade.

Said a gentleman to us the other day, "I have been trying to get some fruit this year. I can not get it at any price. My wife and I have decided that we shall have to lay in a stock of comb honey. What is it going to cost us?"

"Better get it pretty soon before it goes much higher."

"But," said he, "I can not find it. Have you any?"

"Not yet, but we hope to have some soon."

"Well," said he, "when there is no fruit, honey is the only substitute."

Never was a truer thing said; and yet there is a tendency on the part of many dealers to hold down to the prices of last year. We can not blame them much, as new conditions leave them in the attitude of the senator who said, "I should like to know where I am at." But they should wake up to the situation. They must offer a better figure, as some are doing, or they will not get the honey. Columbus, Indianapolis, Zanesville, and San Francisco are offering good prices.

There seems to be, in many localities, a chance for a fall flow of honey; in fact, it is already on in our locality from goldenrod and some remnants of sweet clover. There has been comparatively little robbing this season, as honey has been coming in slowly from some source.

SUGAR OR HONEY AS A MUSCLE-PRODUCER.

EVER since the days of Liebig it has been the opinion of chemists that sugar and honey were mere heat-producers, therefore of less value to workmen than meats, eggs, cheese, fish, and other proteid foods. Gradually the trend of scientific thought has been changed, and natural glucose, which is the principal constituent of honey, and the sweet part of fruits, is now considered a very valuable muscle-producer. We do know children are very fond of fruits, sugar, and honey—a purely natural craving that ought to be satisfied in some manner. The following from the *Louisiana Planter* (translated from *La Sucrerie Indigene*) will serve to show the trend of modern ideas on the subject of sweets, and at the same time bear out this claim:

Mr. Chauveau found that muscle which worked consumed only the glucose or the glycogene carried by the blood circulation. From this the energetic value of a food should not be measured according to its calorific power—that is to say, not by the number of calories produced by its combustion in a calorimeter, but rather by its yield in glucose. Here the saccharose and starchy materials take the first rank. Chauveau has calculated the isoglucosic equivalents corresponding to 100 grams of fat, and that result one would compare with the equivalent of Rubner cited above 100 fat corresponding to 153 grams of (cane) sugar, 161 grams of glucose (honey), and 146 grams of starch.

Lefevre has essayed to reconcile these two theories that diverge somewhat. He conceded readily, admitting that an organism which labors and which receives the fat transforms this fat into glucose in absorbing 334 calories per 100 grams of fat and in forming 161 grams of glucose. This quantity of glucose will give 480 calories by the combustion in the muscle, and there will remain 120 calories for the energy and the work—a total of 934 calories. If one gives to the organism glucose exclusively, all the calories will pass into work, as they will not have to undergo the preparatory transformation. Lefevre concludes that fat is a source of heat, and sugar a source of work.

Other conclusions might be drawn from the works of Lefevre relative to the digestibility—that is to say, digestive utilization, of the various foods. Among them sugar (of all kinds) holds the first rank, being equal or superior to 96 per cent, and then white bread, rice, and mashed potatoes. Eggs and meat occupy the sixth and seventh rank, and milk the eighth.

All these conclusions are very interesting. They fix in a manner absolutely scientific the basis of feeding in general and the great value of sugar. The practical conclusion, which can give only excellent results, will be the taking into account and determining the rations of soldiers and horses in the army. There the old errors still continue, and very often the men and the animals are fed, if not insufficiently, at least in a manner scarcely hygienic. If we follow our ordinary tastes we do not deceive ourselves.

We may say by way of explanation that the glucose here referred to is not the artificial article which masquerades in this country as "corn syrup," but the purely natural kind which is found in honey and fruits. The artificial product is lacking in taste, so that the human stomach rebels against it; and the free flow of saliva, so necessary to good digestion, is greatly if not wholly curtailed. Honey heads the list of available sweets because it not only "makes the mouth water," but is immediately converted into glycogen without trouble, and in that state passes directly into the blood. Of the solid matter of honey (80 per cent) not $\frac{1}{10}$ per cent of it is wasted in any way when consumed, hence it is real economy to use it more, especially by indoor workers whose digestion is poor, and whose muscular system needs toning up.

Over the whole of Europe there is an idea that honey is very useful in the treatment of consumption; and recent discoveries tend to confirm this, for it is clear that a food which so quickly enters the blood and repairs the working tissues may be useful in warding off or dispelling the germ of consumption.

The words of Lefevre, "If one gives to the organisms glucose (*honey*) exclusively, all the calories will pass into work, since they will not have to undergo the preparatory transformation," ought to be written in letters of gold and displayed in the honey-house and apiary, because they indicate honey is the best food of its sort ever obtained by mankind.

IN MEMORIAM OF L. STACHELHAUSEN.

Mr. Stachelhausen, whose death we recorded in our issue for Aug. 1, was born near Fegensburg, Bavaria, in 1845, when Bavaria was an independent kingdom. He was of noble birth according to German ideas, his father being the owner of a landed estate. When ten years of age he was sent to a boarding-school, and it was while there he gained an insight into the art of keeping bees. His uncle kept bees, and by making frequent visits to him he was enabled to get a very fair knowledge of bee culture, as his relative was progressive, and had adopted the movable-comb system. The impressions he got then never left him, and more or less during his life he kept bees. From 1861 to 1864 he studied diligently in the scientific department of the University of Munich, from which he graduated. He next went to the State School of Mines at Loeben, in Austria, to perfect his intellectual equipment as a scientific engineer. During the year 1866 he surveyed several gold and silver mines, in Hungary chiefly. In 1867 he was appointed superintendent of a glass-factory in Bavaria. Later he conducted iron-foundries and machine-factories in Saxony and Bavaria.

It was in 1867 he started his first apiary as soon as he was settled in a home of his own, and practically was never without bees until his death—a period of 40 years, during which time he became thoroughly conversant with scientific and practical bee-keeping as conducted on both sides of the Atlantic. In 1870 he married; and during all his long career, both in Germany and America, his wife truly shared his joys and sorrows as a faithful helpmate. She survives him, very much mourning his loss.

A train of circumstances induced him to leave Germany and seek his fortune under the stars and stripes, choosing Texas as the scene of his future success as a citizen and as a bee-keeper. In 1893 his only daughter married Mr. Ed. Dietz, who became his partner in bee-keeping, and so continued till the last.

Mr. Stachelhausen was not long in this country before he found it necessary to express his opinion in the bee-journals, like his American brethren in the craft. Even if he was a German of the Bavarian species he knew how to express himself in very excellent English—in fact, he had a thorough mastery of scientific words and phrases, such as only an American or Britisher trained in scientific schools might be expected to possess.

He was equally well equipped when it came to practical matters connected with bee-keeping. For example, he was the first exponent of the brushed-swarm system of controlling increase, and in time succeeded in convincing many American bee-men that it was an entirely sound and effective system for money-making bee-keepers to adopt.

At first he was considered too radical; but in time he succeeded in convincing nearly all his critics. He was also the most prominent and daring of all writers on the shallow-hive system, which at present is receiving more attention than ever before. He worked his hives on what may for convenience be termed the Heddon plan; but he went beyond it. Being quite successful in his bee-keeping operations he succeeded where others failed in inducing bee-keepers to adopt the shallow-hive system.

Bee-keepers mostly know of him as a champion of brushed swarms and shallow hives, and are apt to overlook his splendid knowledge of the science of bees, which he endeavored to extend to other bee-keepers not so well informed as himself. As a graduate of the scientific department of a great German university he was well equipped for such work. Moreover, he was very modest and unassuming in what he did and wrote, never descending to personalities or engaging in any pedantic pleasantries for the sake of fame. No one would have supposed he was so well informed, either from his manner or appearance. He looked like an honest, sturdy German farmer of the well-to-do type, rather than a trained and learned investigator.

On his Texas farm in Bexar Co. he lived a happy, contented life, for he was quite domestic in his tastes and habits, and liked nothing better than his own home surrounded by his friends. His end, however was, pathetic. In August, 1906, the first sign of cancer of the tongue began to show. A consultation of several doctors in San Antonio decided that the only hope was treatment by the X rays, which he took for 10 months before the end came.

He suffered his terrible affliction with calmness and fortitude, and, indeed, read Gleanings within an hour of his departure from this world. In anticipation of his death he had asked to be removed from San Antonio to his farm, on the 5th of July, and on the morning of the 7th he expired.

Many bee-keepers who personally knew Mr. Stachelhausen will hold him in kindly memory; and bee-keepers generally, both here and in Europe, will feel they have lost a friend. His place in our remembrance will be alongside of that of Adam Grimm and Samuel Wagner, his gifted fellow-countrymen whose names are revered by American bee-keepers.

Germany has contributed many able men to the upbuilding of America, but none of them better than Stachelhausen the bee-keeper.

We have just received an advance copy of the new edition of the British Bee-keepers' Guide-book, by our esteemed friend the editor of the *British Bee Journal*, Mr. T. W. Cowan. The new edition is a considerable improvement on the former ones, to keep pace with the times. It is not a very large book on bee-keeping, but it is a great credit to all who have to do with its make-up. It has had a very large sale, and the new edition will doubtless be as popular as the former ones—probably more so.

HIVING SWARMS HAVING QUEENS WITH CLIPPED WINGS.

"Say, Doolittle, do you ever talk with folks on subjects which are out of season?"

"Well, Smith, is there any subject about bee-keeping which is out of season when a bee-keeper has the *bee-fever* on?"

"I guess not. But some are telling in the bee-papers that articles on bees should appear in print at just the season of the year when the matter contained can be put in practice."

"I know such has been spoken of; but a *live* bee-keeper can keep track of a thing he wishes to know about until the time comes to put it in practice."

"I am glad to hear you talk in this way, for my special errand over here at this time is to know how best to hive bees when a swarm issues having a clipped queen. I know that this is out of season, as the swarming season is past; but I have had such provoking work with a few swarms this summer that it seems as if I could not wait till another year before I know how to be master of the situation."

"Well, about the best way is to set the parent hive from its stand and put a swarm-equipped hive in its place. As soon as the bees miss their queen they will come back to the old stand and begin to run into the equipped hive, when you will let the queen run in with them, and then your swarm has in reality hived itself."

"Yes, I know that way; but I wish some way of having them alight, for it has happened more than once that two or three swarms are in the air together, and then they will all pile into one hive when they come back, and I have no means of getting them where I want them. I want them to alight the same as does a natural swarm."

"I do not allow natural swarming now; but when I used to I had no trouble in having the bees alight where I wished them to, when holding a swarm away from a hive for any length of time, where such a thing was desirable."

"That is just what I want. How is it done?"

"Have you a Manum swarm-catcher?"

"No."

"Well, you want to procure one during the winter, so as to be ready for next swarming season."

"I will do that if you can show me that success will come from its use."

"Very well. When your swarm issues, proceed to secure the clipped queen in your wire-cloth cage, the same as you do in hiving swarms on the returning plan, when you will put the cage containing her in the swarm-catcher, leaving the lid or cover to the catcher open. Now raise the catcher by the pole in the air, and keep it where the bees are the thickest, when, with about two swarms out of three, they will scent the queen and alight right in or on the catcher. When they have begun to alight about the queen, set the pole up according to directions and go about what you wish until you are ready to hive them."

"How long will they stay there in waiting for my motions?"

"As long as you want them to."

"Will they stay two hours?"

"Yes, or two days."

"But won't they go off if I leave them too long?"

"I think not. I have left swarms thus over night, and I have had them start to go off, being gone from five to twenty minutes, but they always return as soon as they find out the queen is not with them."

"But don't they go back to the old hive when they return?"

"I have never had them do so. I supposed they might do this, but in every instance where they have tried to go off they have returned back to their queen."

"You said about one swarm out of three might not alight on the catcher. What do you do in these cases?"

"Where they begin to alight before they find out that their queen is in the catcher I carefully push the catcher up under the limb they are alighting on, holding it there for a minute or two, till quite a cluster has collected on and in the catcher, when it is lowered a little and swung one side so that none of the limbs or leaves of the tree will be clustered upon when the swarm has all gotten together, when the pole is fixed according to directions, and left till I get ready to hive the swarm."

"That is easier than I thought possible, and relieves my mind quite a little. Now tell me how you hive them when you are ready."

"Having the swarm all clustered on and in the catcher, the same is carefully lowered so as not to detach a part of the swarm by hasty, jerky movements, when the bees are carried to the prepared hive by taking hold of the pole in such a place that pole and bees will just balance. Arriving at the hive, a small portion of the cluster is detached from the rest by poking them off with the blade of my pocket-knife or otherwise, right in front of the entrance, when they will run in, setting up the call of 'home is found.' As soon as this occurs the open mouth of the catcher is lowered to the alighting-board, letting it down carefully so as not to kill any bees, when the line of march will be started for the hive, and the bees go in the same as they do with a natural swarm having a queen with her wings uncut."

"But will they not run up to the hive so fast that they will clog the entrance and cluster on the outside of the hive?"

"Where trouble is expected along this line it is well to lower the catcher a foot or two from the hive, when they are not apt to do this; and even if they do, it is no trick to keep them running in by simply stirring the bees immediately in front of the entrance with the knife-blade."

"Don't the bees take exceptions to such treatment, and become cross and sting?"

"Not in the least, if the stirring is done so gently that no bees are injured, as it always should be. In all our manipulations with the bees we should use as much care as possible not to maim or kill our pets needlessly; and if we do this there is little fear of stings, and especially when hiving swarms."

"How about the queen?"

"When the bees have run in to such an extent as to leave the cage containing the queen so it can be gotten hold of, it should be lifted out and the queen allowed to run in with them."

"But suppose two or more swarms come out at nearly the same time, what then?"

"Allow them to cluster on the catcher, the same as they would on a limb, as natural swarming is conducted, only you will not try to have more than the first caged queen with them, holding the others in cages where you can get them when wanted."

"Yes; but how about the hiving?"

"When they all have settled together, and you have prepared and gotten in place one, two, three, or four hives, in accordance with what you want them to occupy, place a queen in front of all except the first (as that has its queen with the cluster on the catcher), and proceed to hive them as I told you before, poking off enough bees in front of each hive to give the proportion needed in each, allowing the queens to run in when two-thirds to three-quarters of the bees have entered the hive. In this way all is done with a perfect ease and certainty, or similar to the way we handle stock of any kind which is kept on our farms."

Honey prices should hold a proper place with other food stuffs, practically all of which have been going up.

It's the bee-keeper's fault if he does not realize a good return for his products this year. Now is a time to learn *how to market* a crop profitably as well as know how to produce it.

BEE-KEEPERS' EXHIBITS.

One feature of the July meeting of the Texas Bee-keepers' Association was the discussion on the value of exhibiting at fairs and such other places where bee-keepers' exhibits should be had. A committee appointed last year has been reappointed, with a slight change, and made a standing committee on exhibits, whose duty it is at all times to look after these matters, getting premium lists in force whenever practicable and using their efforts toward getting bee-keepers to exhibit their products.

A meeting of this committee is contemplated at an early date in San Antonio to discuss what steps of procedure to take up, and all matters that may be brought up before the meeting. Any readers who are interested in this matter, or wishing information, will do well to address me or any of the members of the committee at any time. They are, Louis H. Scholl, chairman, New Braunfels; W. H. Laws, Beeville; F. L. Aten, Round Rock; W. O. Victor, Hondo; and C. S. Phillips, Waco.

HOW MUCH SHADE?

Shade is necessary in the apiaries here in the South, and with the weather around the hundred mark in July and August it is as necessary for the bee-keeper as for the bees. I have thought there was nothing nicer than to be in the cool shade of our magnificent live-oaks, yet I would never recommend these trees for shade in an apiary. Their shade is too dense, and I think such shade is detrimental, even in the working season. As these live-oaks are in leaf the entire year they are detrimental in winter and spring when the hives should be exposed to the sun. Furthermore, during wet weather it takes a long time before a yard under such trees becomes dry again. Bees in too dense a shade are always behind. They are not only late in the spring, but come out later in the day, and turn in earlier in the evening. The picture of the tree shown on page 1205, affords enough shade for an apiary of several hundred colonies, yet I would not use the location.

MAKING INCREASE.

Ever since divisible-brood-chamber hives were used in my apiaries, what is known as the Alexander method of making increase has been used by me. In handling sections of the hives instead of combs there was no looking for the queen when a division was made. Instead, excluders were slipped between the two sections of the brood-chambers on a visit to the apiary, and upon a second visit, a week or so later, the upper section, with bees and all, was removed to a new stand. A queen or ripe cell was introduced into whichever one was the queenless half, a section of empty extracting-combs set on each division, and covered up. The entrance to the new division was closed with grass or moss to hold the bees for several days, and to keep out robbers until the colony had become organized. Such colonies are generally made after the honey harvest, when plenty of empty extracting-supers are on hand and we have our fall flow of darker honey

from broomweed; and often we do not see them again until our spring examination several months afterward, unless we make an extra late fall examination for winter conditions.

TEXAS BEE-KEEPERS' CONVENTION.

The annual meeting was held at College Station, July 23–25, and was a successful one. Every member present was enthusiastic, and wore a smile this year, due to the fact that a good crop was made and prices were also good. There was not a large number present, but there were many interesting discussions. The officers elected were: W. O. Victor, Hondo, President; D. C. Milam, Uvalde, Vice-president; Louis H. Scholl, New Braunfels, Secretary and Treasurer.

The annual place of meeting is at College Station, in connection with the Texas Farmers' Congress, the bee-keepers' association being one of the affiliated sections of some twenty agricultural and kindred organizations forming that body. This congress is one of the greatest organizations of its kind, and is doing great things for the betterment of all the industries represented in it.

THE DEATH OF L. STACHELHAUSEN.

Never before did the bee-keepers of Texas and the whole South mourn a greater loss than that of our most highly esteemed friend and fellow-bee-keeper, Mr. L. von Stachelhausen. He was a bee-keeper of world-wide reputation, and a gentleman—honest, stalwart, and upright, so characteristic of his race—the German.

Mr. Stachelhausen was a near neighbor, living only fifteen miles away, and the way to some of my apiaries led by his home. He was always an intimate friend of mine, and none can feel his departure more than I do. I will always remember him, because he came to see me when I was in a critical condition in one of San Antonio's hospitals last year, and because of the first words he uttered, in the German tongue, "I heard of your being here only late last evening, so I came right away to see you." And only a month later he himself had to take my place in a similar institution. He was unable to see his friends, however; but our correspondence was kept up regularly, he often writing me while confined to his bed. His sufferings were unimaginable; but he stood them, and did not give up hope. It was not until he had returned to his home on the Cibolo that I saw him once more, just previous to his death. The Texas Bee-keepers' Association loses in Mr. Stachelhausen one of the most highly esteemed members; and at the last meeting, in July, at College Station, the members assembled half an hour in memorial service on Wednesday forenoon of the 24th to commemorate his loss. He was held in reverence by all, and proper resolutions were read and adopted.

BEE DEMONSTRATIONS.

Such things are profitable if rightly managed. If anything will hold a crowd a demonstration with *live bees* will do it. I had this experience recently at the annual meeting of the Texas Farmers' Congress, making "a complete demonstration of the bee business with a hive of bees, alive, on the stage." A medium-sized colony of hybrid bees was taken from the College apiary, "tamed" with smoke in the usual way, then carried to the assembly hall and simply set on the stage *without wire cages or other preparation.* They behaved nicely and gave no trouble. Still, I would not recommend such procedure under all conditions. Many congratulations were received for the way our demonstration was arranged. There was a regular program, and several persons on it taking up different phases of bee-keeping, instead of leaving it all for one person to do.

Mr. W. O. Victor was selected to act as a chairman, and announced each subject of the program as it was taken up by the different persons who assisted in the demonstration. For instance, a short talk on the scientific side of bee-keeping; the kinds of bees and their functions; organization of the colony, etc., was the opening part given to my brother, Ernest Scholl, assistant and apiarist in the Department of Entomology of A. and M. College. J. W. Pharr, an extensive queen-breeder, spoke briefly on queen-rearing, value of good queens, introducing, etc., and was followed by W. H. Laws on raising queens and bees for sale and shipping, both local and carloads. This gave sufficient time for F. L. Aten and the writer to get the bees and extracting-outfit ready for our part of the demonstration.

The writer then took up practical bee-keeping and honey production as a business—who should keep bees; in country and city; purchasing the first bees and supplies, and preparation of hives; location for apiaries; swarming and hiving swarms; comb-building and foundation; relative cost of wax and honey production; different kinds of honey; yields; marketing. This was followed by the *real* demonstration, for which everybody anxiously waited. The bees, having been in plain sight throughout the performance, held the crowd admirably. Everybody wanted to be there when that hive was opened, and see the fun.

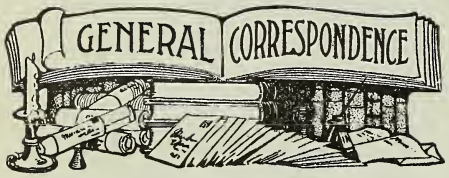
How to open the hive, emphasizing the importance of a few whiffs of smoke into the entrance, and a few more upon raising the cover, thus inducing the bees to fill themselves with honey, was gone through with to answer the first question asked by Prof. J. H. Connel, President of the Congress, who said he wanted to know first how we tamed those bees. The most of the audience did not believe that they were tame.

Combs of honey were removed, uncapped, and extracted, and again returned to the hive, each phase being briefly explained. With the assistance of Mr. Aten the honey-extractor was tilted forward after the combs were put in, so all could see the reversible baskets, and what would happen to the combs of honey was explained. This I found the most satisfactory way to exhibit the work

with the extractor, as it is impossible to let all see the "performance" with the extractor standing upright in a crowd.

With the idea that others who might wish to make such demonstrations might draw at least some idea as to how to arrange it, I have gone into details. The subject matter must, of course, be changed to suit the occasion.

A successful feature in such demonstrations is to arrange for several persons, experts in their lines, to take part, letting each handle his own subject briefly. This creates a better interest and closer attention of the audience every time a new speaker "trots out" with something new. Besides, each speaker starts out with something "fresh." It has a great advantage over just one person covering the whole subject, as it becomes monotonous to the audience and tiresome on the part of the speaker to keep up an interest for an hour or more, on the same subject. People want a variety, so we must provide for that.



CELLAR WINTERING.

The Effect of Disturbance; How to Manage so that there will be but Few Dead Bees on the Floor.

BY E. W. ALEXANDER.

[This article, as will be seen, came late last March; but as the subject for discussion would be more seasonable we have held it until now.—ED.]

It seems rather strange to me that Mr. Bingham, on p. 407, March 15th issue, should question the importance of perfect quiet in bee-cellars during the long cold months of the northern winters. I think our experiences must be taking diverging lines. For a long time I have thought that this subject of perfect quiet was one upon which we could all agree, but it seems there is a difference of opinion even here.

Now, before entering into an argument I will admit that there are certain times when the conditions are such that a disturbance among the bees is not in the least harmful. For instance, the disturbing influence of the sun on a warm balmy day in early November, even though it causes every bee in the colony to take a fly, can not be considered detrimental; but if on a cool cloudy day we open the hive with a snap and a jar, using smoke to enable us to replace the light combs with combs of honey, thus breaking up the winter cluster, causing the bees to fill themselves with honey, then certainly we have sown the seed of winter losses and spring dwindling. And, while it might not do our bees much harm to enter their cellar and quietly remove the dead bees from the floor, I do think it would be a great mistake to take off the bottom-boards and tops with a sudden jar, and then carry the hive-bodies to another part of the cellar, using smoke to keep the bees in, causing them to gorge themselves with honey. Then carefully sliding a dish holding a pound of warm honey under the cluster of a colony, and withdrawing from the cellar as soon as possible, might disturb them but little, as but comparatively few bees would be engaged in taking up the honey. But if you remove some of the center combs, and pour the honey into them, returning these wet combs to their hive, causing all the bees to fill themselves with honey, and to scatter through the hive, then again there would be cause for future restlessness and loss.

The injurious effects of disturbing bees in winter depends to a great extent upon how often and to what an extent it is practiced. When we wintered our bees in the cellar of our dwelling-house, with four rollicking children playing over them, it was no uncommon thing for many colonies to be badly affected with dysentery in February and March. Then it was "Hobson's choice" to leave them in the cellar and see them waste away and die, or set them out for a fly and have the most of them die after they were put back, for the bees never again quieted down into a compact cluster, but continued restless and uneasy until they were set out to stay.

In regard to the effect of a continued jarring noise over a cellar of bees, as in the case of The A. I. Root Co.'s bee-cellar under the machine-shop, I would say that I have always believed this disturbance was very closely related to the necessity of so many mid-winter flights.

As to giving bees a sleighride of fifty or sixty miles in mid-winter, I am quite sure that there are not many that would care to have their bees handled in that way for much less than their actual value. I have brought home on a sleigh bees that I bought in the winter, and then put them into a cellar; but without a single exception I had to set them out early in the spring in order to save them. Bees handled in that way never will stand five months or more of confinement. I have never thought that it did any particular harm to enter a bee-cellar occasionally for a few minutes, if as little noise is made as possible.

But when from any cause a disturbance is made in winter to the extent that the cluster is broken up and the bees get frightened, filling themselves with honey, then because of the unnatural condition they are injured very much and only a chance to fly will restore them to a normal state.

We have to-day, March 23, 750 colonies in our cellar, and the bees are so still with the thermometer at 45° that, when I entered this morning with a lamp, it was almost impossible to hear the least noise, and there seems to be less than 4 quarts of dead bees in the cellar, and not a spot of dysentery on any hive.

I have given many years of study to learn how to keep bees through a five-months' winter in that way, and I must say that, if there is any one thing connected with cellar wintering that has more to do with success than any other, aside from good food, it is perfect quiet. When we take a hive from the cellar with only about a pint of live bees, and see about four or five quarts of dead bees around it, we can hardly say that that colony lived through the winter; but when they can be placed on their summer stands after 160 days' confinement, apparently as strong as they were Nov. 1, then we can say we know something about wintering. This has been done, is being done, and can be done when they are kept quiet. But it will be a long time before it can be accomplished where they are subjected to harsh disturbance during long northern winters.

Delanson, N. Y.

HOW TO CURE FOUL BROOD IN FIVE MINUTES, AND YET SAVE ALL THE GOOD BROOD.

BY N. E. CLEAVER.

I have never had any foul brood in any of my yards, and so have not practiced the plan at home. But I am called all over this part of the State to treat foul brood, and have had only one failure since using this method. The plan works equally well for old box hives or new and up-to-date hives, and is so simple that any one can work it.

Provide the following outfit: 1. A nice clean hive with full sheets of foundation, and in the center a frame of unsealed brood, with some adhering bees from a colony that has no disease (a caged queen may be hung by the side of the frame of brood if desired). 2. Tack a small piece of queen-excluding zinc over the entrance side of a Porter bee-escape board, to prevent drones from clogging the escape, or a full sheet may be used without tacking.

Now you are ready to begin. In the evening, during a fair honey-flow, lift the diseased colony from the stand and place the clean prepared hive where the diseased colony had stood. Do not put a cover on this new hive, but instead put on the Porter bee-escape board with the opening downward. Now take the old bottom-board off the diseased colony (if the bottom-board is nailed on, you can either knock it off or bore a hole through it), and set the diseased colony on top of the Porter escape-board. Close every entrance to the diseased colony if there is any. Be very careful about this part; do not leave an opening anywhere except the one through the escape-board into the lower hive. Shade the upper diseased hive, or it may overheat the next day when the sun comes out.

Now you have not been more than five minutes, probably not more than one minute, and your part of the work is done. In the morning, when the bees go out to work they will carry no diseased honey with them. They go out through the Porter escape and through the new clean hive. When they come back loaded with honey, they can not get back up into their old hive, and so deposit the honey in the new clean hive. The frame of brood makes them feel at home, and from it they will raise a queen, if you have not given them one. The old queen goes on laying in the upper story until the honey and nurse bees get scarce. In two or three weeks the upper story will be practically deserted; sometimes a handful of bees and the queen will be all that you will find, and sometimes all will be dead. If you want to utilize the colony for section honey, though a diseased colony is not likely to be strong enough for that, you can take away the upper diseased hive after about a week, and the loss in brood will not be very great. When the diseased hive is removed it should be taken into a closed room, the few remaining bees should be destroyed, the combs melted at once, the frames burned, and the hive carefully cleaned. If the hive is a cheap thing, burn it. I said I had one failure in working this plan. The apiary belonged to a woman. I told her how to proceed after the bees were trapped out of the diseased hive, so she took the honey and old combs out of the frames, burned the frames, carefully cleaned the hives, and set the diseased honey out in the wash-tub "for the bees to eat." The last part reminds me of the article on page 907. Well, the bees ate the honey and spread the disease all through the apiary, and she said she thought my plan was a failure.

If I were working in my own yard where time is not so great a factor, I would put an empty hive under the diseased hive, and take the escape out of the escape-board, and get the bees accustomed to going out and in through the lower hive, before trapping them out; they would not then be so likely to be excited and carry diseased honey out with them.

Any one who understands catching queens should put the old queen in the lower hive at once, keeping her caged for a day or two, unless it is desirable to requeen the colony.

If the colony to be treated is a very large one, it would be well to place an empty super on the diseased colony to give additional air-space, and make the danger from suffocation less.

The frame of brood in the lower hive is not essential to the plan and may be left out, but the bees start to work better with it in. I think this plan has three advantages over the McEvoy system. It enables the bee-keeper who is afraid to shake his bees to treat the disease successfully; it saves the good brood, and it can not spread the disease to other colonies. The McEvoy system shakes bees full of diseased honey, and in the excitement some get into the wrong hives, carrying the diseased honey to well colonies. And then, if requeening is desirable, there is no hunting for queens: the merest novice in the business can requeen successfully.

Emporium, Pa.

[The plan that you have presented seems to have considerable merit in it, but involves the same principle as was proposed by M. M. Baldridge, of St. Charles, Ills., about ten years ago, but he used an outside chute in connection with the bee-escape that delivered the bees directly outdoors. They would go to the field, then on returning would go back to the hive beneath. The only question is whether the bees going down through the perforated zinc into the other hive might not, before they go outdoors, feed some of the infected honey to larvæ and thus spread the disease in the lower hive. If they have never done so, then the method has some advantage in the fact that it permits one to save practically all of the good brood.—ED.]

WHITE CLOVER.

A Theory Offered to Show Why it Does not Always Yield; the Effect of Drouth; Young Plants.

BY VIRGIL WEAVER.

Producers, consumers, and dealers alike can take warning from this; for the very drouth that made Dr. Miller's cow-pasture brown, page 478, last summer, prevailed over 75 per cent of the white-clover belt of the United States. Eastern Kansas, Eastern Nebraska, Missouri, Iowa, Illinois, Northern Indiana, and Northern Ohio are all included in the list that will not produce twenty-five per cent of a white-clover crop in 1907; so the producer that secures a crop of honey this year can expect a pretty stiff price. While the crop north of the Ohio River will be a failure from white clover, the reverse is true of the conditions south of the Ohio. In the white-clover belt of Kentucky and Tennessee, which is a very limited area, prospects are the best in ten years. With the largest area covered with clover in years, and an unusual amount of rainfall at just the right time, prospects are very flattering indeed.

How do I know these conditions? There has not been a drouth over this territory since 1901, when the dry weather cleaned out all of the old white clover. Weeds and grass were cleaned out to a certain extent. The year 1902 was excessively wet, and the young white-clover plants simply covered the face of the earth. Then 1903 gave the greatest yield from clover on record. So do not have the blues, for an occasional drouth is very beneficial to white clover. Without the drouth we can not have a crop of young white-clover plants; and without these young plants we secure only a moderate honey-flow. So while 1907 will be a failure, 1908 may give a bumper crop.

There has been a great deal said by the knowing ones of late years about weather conditions for a honey-flow. Bee-keepers seem to be superstitious about conditions that produce a flow of honey. Dr. Miller was puzzled last year as to why his white clover did not yield. In the first place the clover was old and poorly rooted; also a moderate supply of embryo blossoms set in 1905 to bloom in 1906. Then with a falling-off of his rainfall last spring there was very little white-clover bloom in his locality—just enough for one to think that he should have a honey-flow; but a few thousand clover-blossoms will not make a honey-flow. It takes billions.

There is a difference of opinion as to why a honey-flow will suddenly stop after a thunder-shower. This is the case only where the blossoms are large and open. Basswood, tulip, buckwheat, etc., are affected thus. Before the thunder-shower, with low barometric pressure, the flow is great, as the large amount of moisture in the air adds to the honey secreted by the flower; while after the thunder-shower, with high barometric pressure, the flow is least, as the dry air takes from the honey secreted by the flower and the flow stops. White clover, asters, goldenrod, and, in fact, all flowers that have a close blossom, are not affected to a very great extent by the high or low barometric pressures. So, watch your weather conditions closely, and be governed accordingly.

Baldwin, Ky., May 9.

[Knowing that Dr. Miller had spent a good deal of time in studying on this same question, we sent the above article to him. His reply follows.—ED.]

The nub of Mr. Weaver's theory, as I understand it, is that a severe drouth kills off the old clover, which is not so good for nectar; the succeeding year young clover springs from seed, and the second year after the drouth is the one to be depended on.

I don't know enough to say whether this theory is right or wrong, but may suggest some points that need reply by any one defending the doctrine.

What is the proof that old plants do not yield nectar as well as new?

In a year of drouth one would think the seed would not be so plentiful nor so good as in a prosperous year. Do not seeds form in as great abundance in a good year, and will they not produce as many and as good plants in good as in bad years?

Perhaps it may be offered that the "old and poorly rooted" clover occupies the ground, so that the young has no chance. But if there is any crowding out, ought not the "old and poorly rooted" to be the part crowded out?

But it must be remembered that propagation by seed is not the only means, nor, indeed, the chief means, of increasing white clover. Give it time enough, and a single seed is enough to stock an acre, as it goes creeping and rooting at the joints. Are not the new plants thus formed every year of the most vigorous sort?

Mr. Weaver refers to the article on page 478, where I say that white clover didn't do its best "although blooming abundantly," and he says, "there was very little white-

clover bloom in his locality." How does he know so much better than I?

In favor of his theory is the fact that 1901 was a year of drouth here, and 1903 a bumper year. Is it the general testimony that each very good year was preceded two years earlier by a drouth?

This seems to be another year of failure in

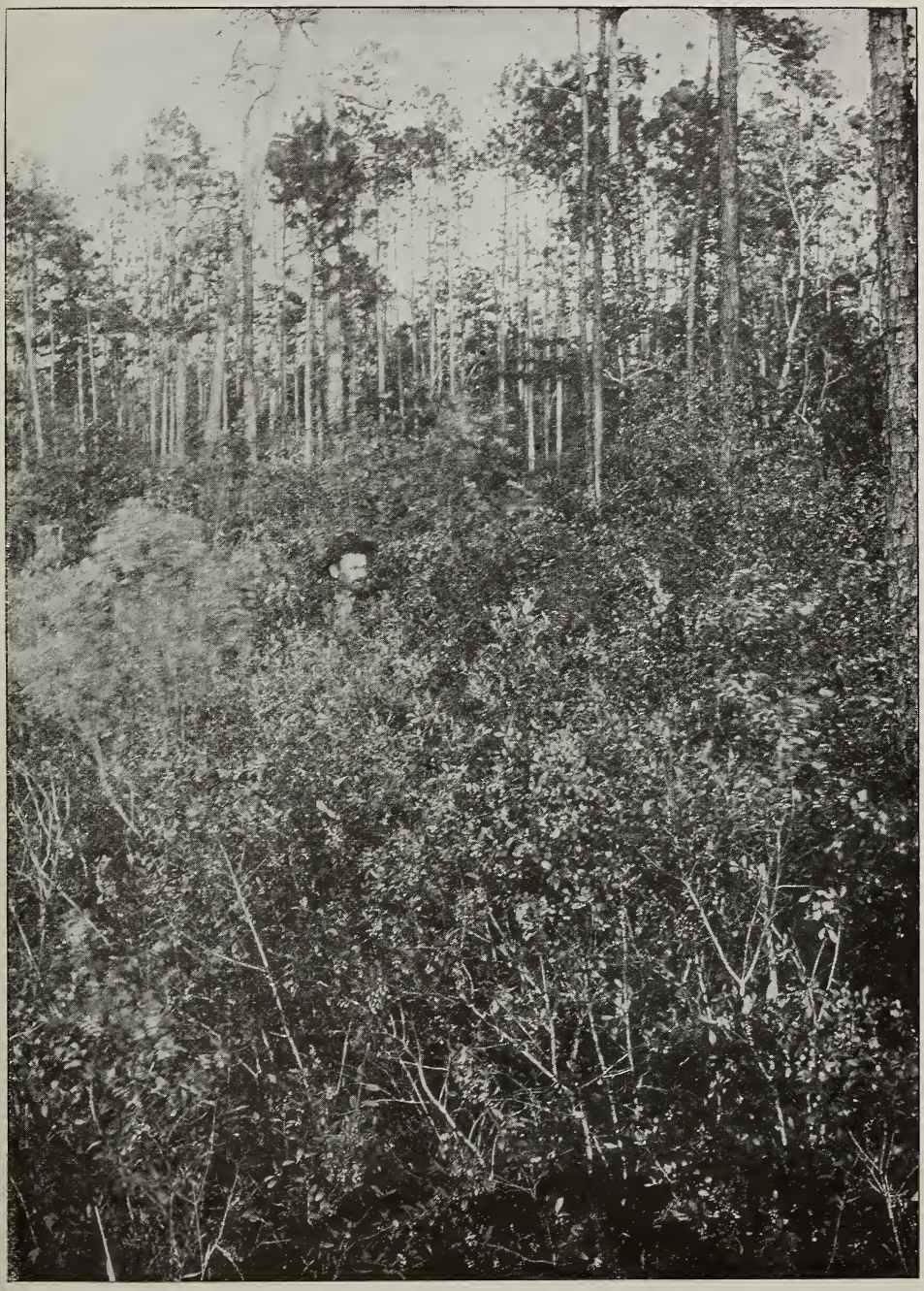


FIG 1.—THE GALLBERRY IN GEORGIA.
The bushes grow so dense that it is difficult to get through them.

this locality. White clover is not abundant; and what there is, I am afraid, is not yielding as it should. A field of alsike, with most luxuriant bloom, attracts the bees but little. Would Mr. Weaver's theory account for this? C. C. MILLER.

Marengo, Ill.

THE GALLBERRY AS A HONEY-PLANT.

A Very Reliable Source; Roots Hard to Exterminate; Many Localities not now Occupied with Bees.

BY J. J. WILDER.

The gallberry is a sprangle-top evergreen bush four or five feet high, and grows prolific everywhere, but is mostly found on waste lands, and spreads both from seed and roots, and is so dense that it is difficult to pass through it, and the roots are hard to exterminate. No growth is detrimental to it; but the great pine forests seemed to have hindered its progress on high lands; but since the forest has been lumbered it is fast spreading. The bushes are never rid of ripe berries, which are food to the birds of the forest.

ITS VALUE AS A HONEY-PLANT.

As a honey-plant perhaps it has no equal in the Southeast. We have never failed to get a surplus from it, even during the most unfavorable weather conditions. It begins to bloom the first of May (settled weather here then), and continues for 24 to 28 days. During this time bees disregard other bloom, working it up to about 8 o'clock for pollen, then the flow comes on for the remainder of the day.

A glance at the cut shows that it is a great bloomer; even the stems are rolls of blooms, and there can be no greater sight in all beedom than to be in the midst of acres of this solid mass of blooms, 4 and 5 feet deep, and see the bees tumbling over the blossoms, loading up and doing but little flying.

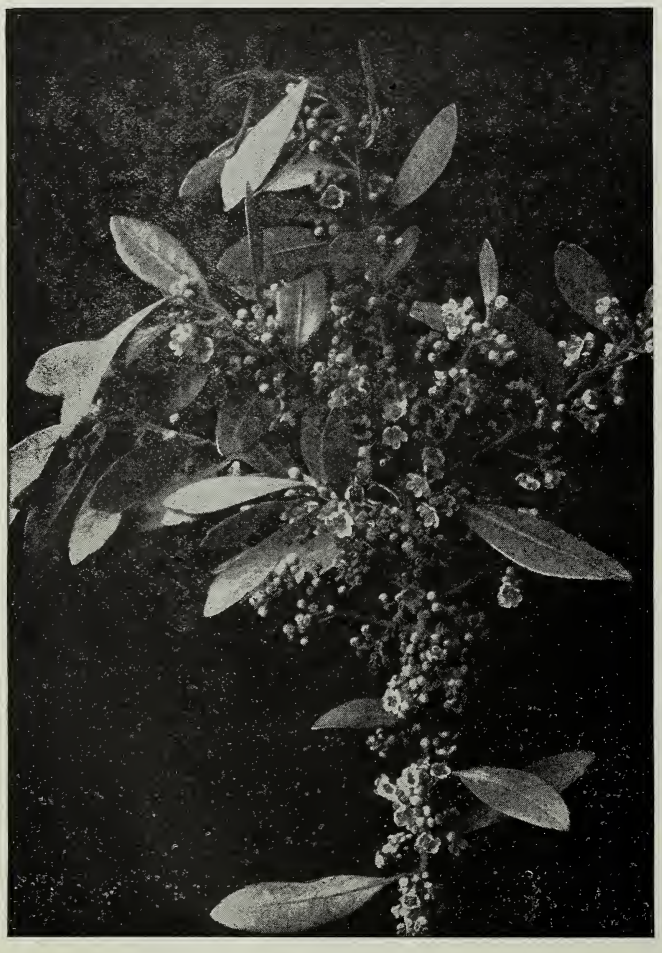


FIG. 2.— RANCH OF THE GALLBERRY-BUSH.
This is a very reliable source of honey in Georgia, for it is almost impossible to overstock a locality with bees.

We have never taken off a large crop of this honey, as 147 lbs. of surplus is the best crop we have ever had from one colony. The honey is of a light amber color, has a heavy body, a very mild taste, and is highly flavored. The demand for this honey is so great that we can not furnish our local markets; consequently very little is shipped from the Southeast to other markets.

We have raised tons of this honey, and have never seen a pound of the pure article, well ripened, that granulated. It is strange we have never seen a bumble-bee, butterfly, nor any kind of insect on the gallberry blossoms, except the stingless and honey bees. Both blacks and Italians work it alike.

It has been said it was impossible to overstock a good gallberry location. We do not know that this statement is true; but we never heard of one being overstocked. We have had bees in a location where there were

362 colonies, with about the same result as with 100.

Good gallberry locations are nearly numberless, and large quantities of this fine honey are wasted each year in locations where there is not a bee to gather it. The gallberry should be put in the list of the best honey-plants of the United States.

Cordele, Ga.

SOME GLIMPSES OF A. I. ROOT'S ROBINSON CRUSOE ISLAND.

BY M. L. BREWER.

Last winter, while planning our annual vacation, I noticed that the senior member of The A. I. Root Co. was at his island cottage home for the winter, and I proceeded at once to write him for directions how to find the path to his front door. In due time said directions were received, though they led by a watery way.

After some wandering we located at Sarasota, Florida, within fourteen miles of the desired place, and at the end of railroad transportation. Sarasota is located on Sarasota Bay, twelve miles below the Manatee River, on the most beautiful sheet of water it has ever been our fortune to see. The bay is about two by four miles, open water, and as completely landlocked as can be by a network of keys varying in size from a rod square to hundreds of acres in extent, and covered with tropical foliage. One can cruise for days through the channels and passes, and here we find the homes of the sturdy fishermen whose vocation is very similar to that of those Christ called, and of whom he so often speaks.

Here we find beautiful winter homes, and more building all the time, and, I believe, the best fishing-waters of the southwest coast. Amid such surroundings, while on a cruise down the bay, neighbor Love and the writer called at Osprey to inquire of the postmaster if he could tell us where we could find A. I. Root. "Why," said he, "Mr. Root is here now, for his boat is at the landing, and I will find him for you." Then a desire of thirty years' standing was realized, for the writer has done business with the firm, and has known the family "on paper" as they grew up for that time. After self-introductions and "greetings," for it was like meeting an "old acquaintance," we could not resist the pressing invitation to accompany Mr. Root across the bay, one mile further, in his sail-boat, to his cottage on the key. Bro. Root was captain, and Bro. Love and I sailors; so, after varying experiences of rowing and sailing, we landed safely at port, where we were met and welcomed by Mr. I. T. Shumard, his wife, and two charming little daughters, Flossie and Clara. Bro. Shumard is one of the progressive bee-keepers of the South, and raises queens for the Root Co., and was very busy at the time of our visit.

Chat soon carried us over space and to other years, and it soon developed the fact that

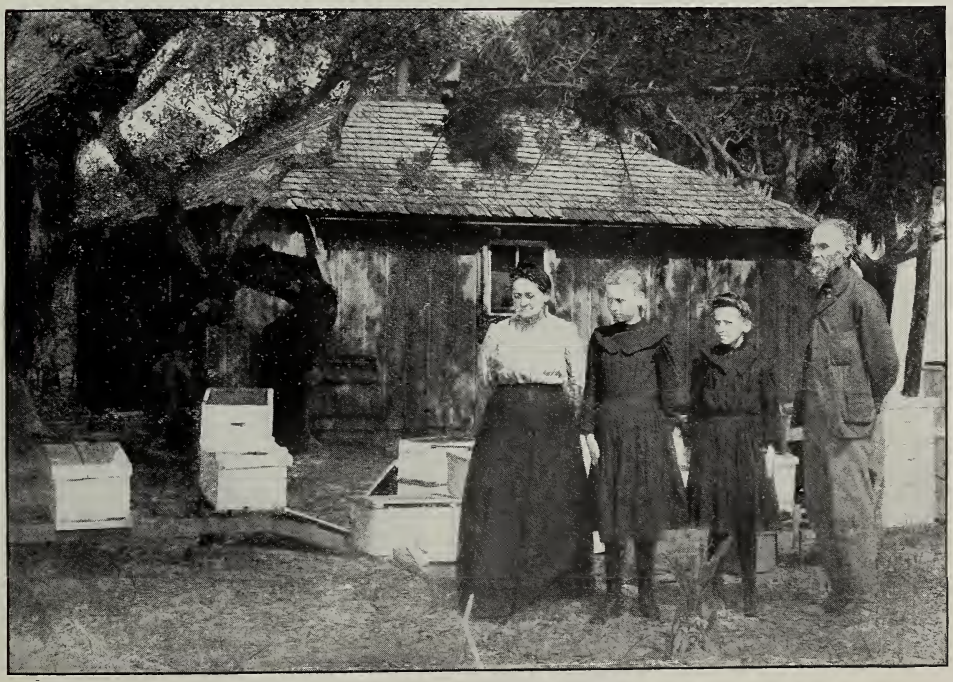


FIG. 1.—MR. AND MRS. SHUMARD, FLOSSIE, AND CLARA ON THEIR ISLAND HOME, NEAR OSPREY, FLORIDA.

FIG. 2.—PAPAYA, OR MELON-TREE OF THE TROPICS—THE TREE THAT BEARS DELICIOUS MUSKMELONS EVERY MONTH IN THE YEAR.

Mrs. Shumard and the writer's wife had known each other in girlhood days.

Our constant companion, the camera, was put to action, and No. 1 gives us the four members of the Shumard family at home that day. Sorry we could not have them all, as I remember there are seven children with their home on the island. The bay (not shown in the picture) is in the foreground.

We saw Bro. Root's cottage under the live-oaks, draped with moss, and where he raised his poultry, and gave us so many instructive lessons thereon. Back of his house about twenty rods is the gulf rolling up its surges. We saw also the Florida greenhouse we heard of in GLEANINGS, and the plants were thrifty at the time of our visit.

No. 2 is a papaya, or melon-tree, with its fruit, that stands in the yard, and it was our privilege to sample the fruit therefrom, and can say it is all right.

Arrangements were made for a later date for the ladies to renew their girlhood acquaintances, and the day fixed proved to be the thirty-fourth wedding anniversary of the hosts, and the day spent at that time was the one referred to by Bro. Root in GLEANINGS on page 498, and one we shall long remember for Christian friendship and fellowship.

Later it was ours to have Bro. Root with us in our temporary home, and with him visit the far-famed nurseries of the Reasoner Bros., where we met a family that was formerly of the Root Co.'s forces, the Westwells. It was ours to meet many bee-men from different parts of the country, and we found them all to be men worth knowing.

Philo, Ills.

ORANGE-BLOSSOM HONEY.

Apiary in California Averages over a Hundred Pounds per Colony.

BY FRANK MCNAY.

One of my apiaries is located within a few rods of a large orange grove (over 2000 acres in easy range). One ordinary colony in a twelve-frame Langstroth two-story hive showed, by the scales, a gain of 119 lbs. in 17 days, April 7 to 23. There are over 100 such colonies in this apiary. A few of them yielded a little more at each extracting than the scale hive.

This apiary worked exclusively on orange during these 17 days. White sage was not yet in bloom, and there is no button or early sage in range of this apiary; and apiaries that were in button-sage locations were doing nothing at that time, as the weather was not warm enough. Sage requires quite warm weather to yield honey.

The scale showed that nearly all of this orange honey was secured in about five

hours of each day from 11 to 4 o'clock. I noticed bees every morning working on pollen blossoms, but before noon every bee made a rush to the orange-trees.

The honey is fine and very heavy. I have some chunk comb orange honey in shallow frames that is excellent.

Redlands, Cal., May 11.

CELLAR WINTERING AT DR. MILLER'S.

High Temperature Does no Harm if the Air is Pure; Why Bees Cluster Out in a Cellar.

BY DR. C. C. MILLER.

Wintering bees in a cellar with a furnace is quite a different affair from wintering in a cellar where the problem is to keep the temperature sufficiently high. After several winters' experience I know at least a little more about the matter than I did; and, as between the two, I think I'd take the furnace every time. You may be interested to take a few peeps to see how things appear when the bees are in the cellar.

First, an outside view, Fig. 1. No hives to be seen there, but I wanted you to see how the outside door is kept during a large part of the winter. Sometimes when the thermometer goes down below zero, especially if windy, the cellar-door is entirely closed, and a good deal of the time it is half closed, propped up with a stick; but for each day it was entirely closed last winter, I suppose it was open ten days as shown in the picture—possibly twenty; but last winter was a mild one.

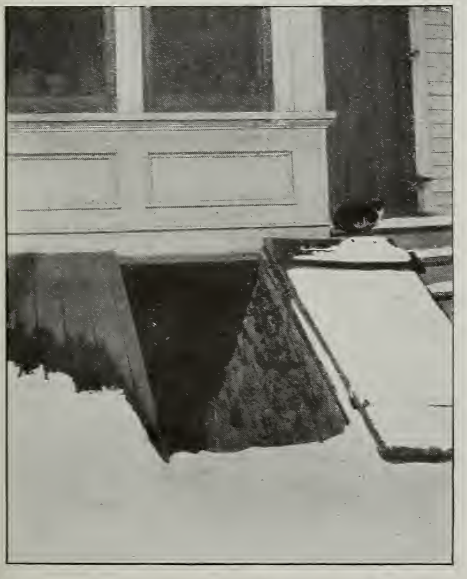


FIG. 1.—OUTSIDE DOORWAY TO DR. MILLER'S BEE-CELLAR; THIS IS KEPT OPEN NEARLY ALL THE TIME.

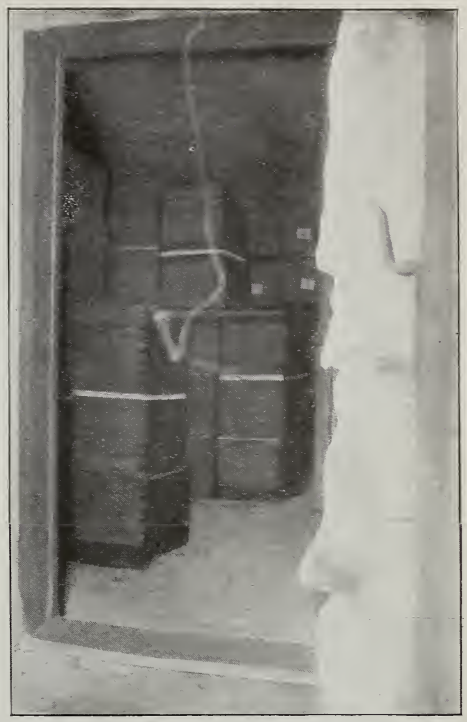


FIG. 2.—ENTRANCE TO THE BEE-ROOM IN DR. MILLER'S CELLAR.

That picture was taken Feb. 20, 1 P.M., and the door was open all night the previous night, and throughout the day, Feb. 20, and yet the thermometer in the cellar stood at 50 degrees. You will easily see that the picture is a snap-shot, with the sun shining brightly, which shows that a good deal of light can be endured. To be sure, no direct light shines on the bees, but the inside door is wide open, and at the back of the hives nearest the door one could see to read coarse print. The temperature at the time the picture was taken was, as already said, 50 degrees, and that's about the usual temperature throughout the winter. It could be kept lower by having the window open, but that would make it too cold for colonies near the window, and on the whole the bees seem to do well at 50.

You will see that the door that is open is covered with snow, and the heat of the cellar has thawed the snow from the upper part of the other door, and it is wet from the melting snow just above the snow-line.

That cellar-door is on the south, as you will see by the shadows; and after going down five steps there is a landing of five or six feet before you come to the door in the cellar wall, which door is always kept wide open since the furnace is in the cellar, as it opens directly into the furnace-room, the furnace standing about 12 feet north.

Notice the stone wall at the right in the cellarway. That same stone wall you see at

the right in Fig. 2. Passing down the cellar - way, and turning to the right, you come to the door that opens into the bee-room as seen in Fig. 2. The backs of the hives face us, so the light will not shine into the entrances except that you see four hives at the extreme east that are facing you. That east row faces in that direction because the window is back of it, and it is better not to have the light shining directly into the entrances when the window is open.

FIG. 3.—INTERIOR VIEW OF THE BEE-ROOM.

FIG. 4.—CLUSTER OF BEES UNDER FRAMES: TEMPERATURE OF CELLAR 43 DEGREES.

Fig. 3 is a flashlight picture showing some of the hives—a difficult thing to get, as the passageway between rows was less than four feet. In very few of the hives are clusters of bees to be seen below the bottom-bars. An east wind was blowing, and the cellar temperature was 48 degrees. But it probably would have looked all the same if the temperature had been 50 or more. The bees do not cluster down as they did before the furnace was in the cellar, although the temperature is now five degrees higher than then, and I don't think the hives were ever heavier with bees and honey than the past winter. I don't know what should make the difference, unless it be that now the cellar is so open that it is much like outdoors as to pure air.

I have seen (no doubt many others have seen the same thing) in a warm spell, toward spring, bees hanging out of the hives in great clusters in the cellar, with the temperature no higher than 50 degrees. I never saw any thing of the same kind outdoors at the same temperature—did you? Now, why shouldn't 50 degrees crowd the bees out when in the open air just as much as in the cellar? Can you explain it in any other way than the difference in the quality of the air? If the bees do not hang out at 50 outdoors, why should they in the cellar if the air is just as pure? Well, you see my bees have a good deal the same as outdoor air, the cellar being so open, and so they behave as they would outside. At least, that is the best explanation I can give.

Look at the cluster of bees under bottom-bar in Fig. 4. At the time that was taken the cellar had been cooled down to 43 degrees. A week later it was made 24 degrees warm-

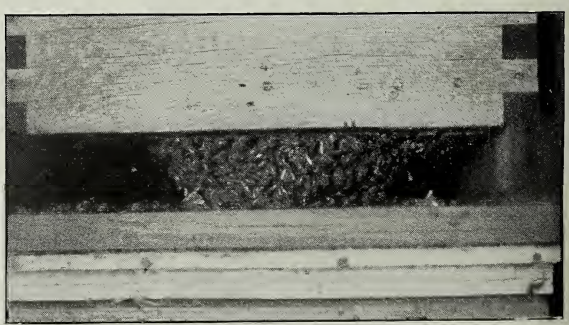


FIG. 5.—CLUSTER OF BEES UNDER FRAMES; TEMPERATURE OF HIVE 67 DEGREES.

er, the temperature being run up to 67 degrees, and you will see by looking at Fig. 5 how the cluster looked at that time. As nearly as I could make out, that increased 24 degrees merely made the cluster a little looser, for the bees did not seem uneasy at all. Fig. 5 was taken March 2, and the floor of the hive had not been cleaned out since the bees were put in the cellar. In the majority of the hives the floor-boards were cleaner than this one. I don't know why.

That suggests one advantage of the warmer cellar—the bees leave the hives to die. Indeed, so few dead bees were left in the hives last winter that it was not thought worth while to clean them out the whole winter, except one hive. It must be a good deal better for the bees to have a clean house; and if the bee-keeper doesn't like dead bees on the cellar bottom he can sweep them up. I don't like them, so I always sweep up two to four times during the winter. Last winter I first swept Feb. 20, when the bees had been in 93 days, and took up 2½ coalhodfuls of dead bees. After 24 more days I took up 2 hodfuls more. After the bees were taken out, March 23, 3 hodfuls were taken up. That makes 7½ hods from 170 colonies for 124 days' confinement.

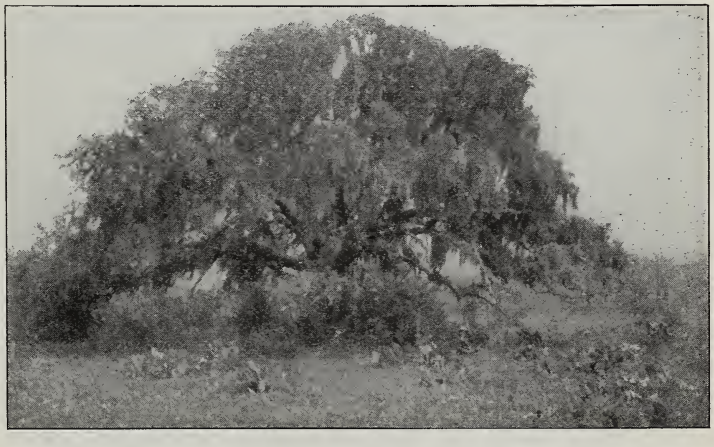
Four of the 170 colonies died. I don't know why. The hives were as empty of bees as if they had swarmed out. Two or three colonies showed signs of diarrhea in spite of the good air; one extra strong one, pretty bad, but the four dead ones left clean hives.

Marengo, Ill.

[We understand from what Dr. Miller has said, although he does not directly say so, that he finds that a furnace in a cellar, with a great abundance of ventilation, gives better results than he formerly obtained when he had no furnace, and the cellar closed most of the time; but it is fair to say that he had a small stove, but only for the purpose of raising the temperature when it got too low. Under the new conditions he is obliged, we take it, to keep the cellar open in order to keep the temperature down to 50 degrees; and, incidentally, it gives the bees a large amount of fresh air.

Dr. Miller raises a very interesting question—why the bees will cluster down among the frames, at shown in Figs. 4 and 5, under a certain temperature in the cellar, when with the same temperature outdoors there will be no hanging down. He, however, answers the question by leaving us to infer that pure air, or, rather, the want of it, in the one case, draws the bees downward into an atmosphere that is too cold for them, but into which they are obliged to go in order to get the requisite oxygen. Pardon us, doctor, for interlining your thought; but if we have assumed more than you intended we hope you will correct us.

It was once universally held that, when bees hung in great festoons under the broodframes, this indicated a condition of perfect wintering; but some events have occurred during the past year or so that would seem to indicate this may be erroneous. J. E. Hand has made the statement that bees come down to shut out the cold. In a cellar without ventilation we have often found that, at a temperature of 50 degrees, the bees clustered down below the frames. Are they there because the hive is too hot? Hardly. The conclusion is that they come down to get more air, and perhaps, as Mr. Hand says, to shut out cold because the opening is too large.



SPREADING OAK IN TEXAS: GIVES SHADE FOR SEVERAL HUNDRED COLONIES, BUT IS TOO DENSE.

See Bee-keeping in the Southwest, page 1194.

A short time ago a correspondent suggested that the ordinary summer entrances were quite large enough if the air in the cellar were fresh, and that bees would stay up in the brood-nest and not cluster down. We are inclined to think he was right. Last winter those of our colonies that were lifted up four inches from the bottom-board did not seem to do as well as those with the ordinary entrances. Let it be understood that our cellar temperature was 50°, and much of the time higher. The windows were open most of the time, and, a great deal of the time, an electric fan was forcing the air directly from outdoors down the row of hives. Over Sunday, when there was no electric current on, the bees would often get very uneasy; but at night, when the fan could be started, quiet would be restored in an hour or so, and

yet the temperature would *not change even one degree.*

Please understand that we do not claim the old policy of a closed cellar with a uniform temperature is wrong, because comparatively good results in wintering have been secured; but we are raising the question whether or not much better results might not accrue with a uniform temperature and plenty of pure air, providing both conditions can be supplied. Experience in our own cellar, at least, has shown that ventilation, and lots of it, is a necessity. Now, we apprehend that, if Dr. Miller were to have kept his cellar closed after he put in the furnace, he would have had severe losses. A high temperature and bad air are both decidedly detrimental. No one will dispute that proposition. The only point at issue is whether a temperature of 45, and closed cellar, affords as good a condition for wintering as a temperature of 45 to 50° with plenty of pure air. In the case of the latter the hive should have narrow entrances, about the same as they had in summer, so that the animal heat will not be dissipated.

Experiments were conducted last winter, showing that a colony of bees in an observatory hive was wintered in a living-room while the temperature was 72 and over, and it wintered perfectly. But this colony had an outdoor entrance. Strange to relate, the bees did not fly out at any time except when it was suitable for them to fly. But a report of this will be given later.

But the point right here is this: These bees were not compelled to waste their animal heat in keeping up the internal temperature of their hive. They had plenty of fresh air. Now, then, if we give our bees too much bottom ventilation in the hives, and then put them in a temperature of 45°, with practically no ventilation of the cellar itself, do we not compel those bees to consume heavily of their stores, thus bringing on dysentery? for overfeeding is likely to cause bowel trouble.

If we in any thing that has been said thus far have made a positive statement we beg leave to withdraw it. We simply desire to throw out a few interrogations around some old orthodoxies on cellar wintering.—ED.]

A YOUTHFUL INVESTIGATOR.

BY FRANK WANSTALL.

The accompanying picture shows five-year-old Ernest Harry Wanstall, who is doing a little investigating on his own account. Ernest wants to know where the bees put all the honey which they carry into the hive, as he knows from experience that there is a good deal to take out sometimes (when he turns the "stractor"). So he has the magnifying-glass to see how it is done, as they are being fed some honey during a warm day in spring. Ernest is not at all afraid of them, but he has learned that there are times when it is wise not to go too near, especially during the late fall, when there is no honey to be got, unless he has one of papa's veils on.

White Plains, N. Y.

ERNEST WANSTALL WATCHING BEES TAKE UP HONEY FED IN EARLY SPRING.

[We desire to commend most heartily our young investigator; but may we suggest that this plan of feeding is, a good many times, fraught with danger, not only to the other bees in the yard but to the apiarist? If there is no colony within half a mile one can pursue his investigations without any trouble. We will assume, however, in the absence of any statement, that the experiment here illustrated was conducted when there was a good flow of honey, and, consequently, not much disposition to rob.—ED].

ROBBING; GLASS PLAN A SUCCESS.

I have tried Mr. Long's plan for preventing robbing, as described on page 1188 of Sept. 15th issue, 1906. It is a complete success—so much so that I consider it worth five years' subscription to GLEANINGS. It is fun to see the robbers get caught, and so confused that they are glad to get away alive.

Bracebridge, Ont., Can. JOHN BAILEY.

A SEASON'S WORK WITH SECTIONAL HIVES.

Swarm Control and Comb-honey Production; Feeding to Stimulate Brood-rearing in September.

BY J. E. HAND.

Sept. 1.—Up to this time our bees have received very little attention since we removed our surplus honey in July; and on account of there not being very much honey-yielding flora during this period our queens have not been laying very much, and therefore the strength of our colonies has greatly diminished since that time. This is as it should be; for, since we do not get any surplus honey from fall flowers, there could be nothing gained by producing a lot of bees that would only become consumers of honey. However, it is very important that our queens be kept laying during September in order to give us a good strong force of bees of the proper age to go into winter quarters; for our success in wintering depends not upon how strong were our bees during July and August, for these bees will be dead before spring; but it does depend upon how many bees our colonies contain that were hatched out during September and October, for these are the bees that are going to stay with us during the winter and spring, or until more can be hatched out in the spring to take their places.

Since there is very little honey being gathered at this time we will place a feeder under each of our colonies and give to each colony about a pint of sugar syrup every alternate day during September unless the fall flowers should yield honey enough to keep up brood-rearing nicely; for the key to successful wintering, as well as building up in the spring, is to have a strong force of *young* bees to go into winter quarters.

FEEDING FOR WINTER STORES.

Oct. 1.—Having kept our queens laying well during September we shall have a good strong force of young bees to go into winter quarters; and the next thing to be considered is the winter stores, for we must have at least 25 lbs. of honey or sugar syrup in each hive to carry our bees safely through the winter and early spring. It is true that we have been feeding our bees mildly during September; but this was nearly if not quite consumed in rearing brood, and the most of our colonies will have to be fed. Hence we will hook a spring-balance scale on to our hive-lifter and weigh each hive, marking the weight of the hive on a piece of section which is dropped into the open end of the feeder, and by deducting the weight of the hive and empty combs, and allowing for the weight of the bees, we know just exactly how many pounds of honey each hive contains; and the difference between this and 25 lbs. is what we shall have to feed each colony; and we know without any guesswork that every one of our colonies will have at the very least 25 lbs. of well-ripened stores. We will feed in this case just as we did in feeding for finishing off sections, except in this case our feed is composed of granulated sugar and water, equal parts, well churned up so as to dissolve all the sugar. We will give to each colony five or six quarts each evening until each has received the required amount.

We find that our bees require more feeding this season than usual—in fact, very few of our colonies have their full quota of winter stores; however, with our large rapid feeders this job is soon over.

MANNER OF WINTERING CONSIDERED.

Nov. 20.—Having our hives well stocked with young bees, and each hive containing sufficient stores to carry them safely through the winter, we will next turn our attention to preparing them for their long winter nap; and right here the question arises, "Shall we winter our bees in the cellar or on the summer stands protected by outer cases?" After years of experience in the successful wintering of bees by both these methods we are as yet undecided as to which method is better, for we have been equally successful with both. Since the hives that are protected by heavy packing enable the bees to build up faster in the spring it is, perhaps, as well to winter bees on their summer stands with suitable protection, south of latitude 41; and since we are located near the dividing line we usually compromise matters by wintering a part of our bees out of doors and the rest in the cellar; hence all our *strong* colonies are selected for outdoor wintering, and those that are a little light, either in bees or stores, are carried into the cellar about Nov. 15 to 20.

Our cellar is very dry, and the temperature ranges between 40 and 45, and our bees always come out of this cellar bright and active, and ready for business. It is not necessary that a cellar be perfectly dry in order to winter bees successfully. However, unless the temperature and ventilation in a damp cellar are properly balanced it is a dangerous place to winter bees.

THE RELATION OF MOISTURE AND VENTILATION TO THE SUCCESSFUL WINTERING OF BEES.

While we shall not attempt to view this subject from the standpoint of the scientist, yet we feel that our success in wintering bees is largely due to a correct solution of the problem of moisture and ventilation, and its relation to the successful wintering of bees. That the part that moisture and ventilation play in the successful wintering of bees is too often overlooked by the average bee-keeper is evident from the too frequent reports of a certain mysterious disease known as spring dwindling, which is the direct result of either improper wintering conditions or a failure of the queen to rear sufficient brood during the autumn months. In either case the bees die off before young ones can be raised in sufficient numbers to keep up the strength of the colony; in the former, by disease caused by improper wintering conditions; and in the latter by old age.

However, in either case the results are the same. It is true that a strong healthy colo-

ny of bees might winter in a hive reeking with moisture, and with the outside combs covered with mold, and come out alive in spring. However, there is a vast difference between a colony of bees that comes through the winter alive and one that comes through in a good healthy condition.

It is not enough that they be *alive* in the spring; but in order to build up in time for the harvest, and thus become profitable honey-gatherers, they must be in a healthy condition—strong, active, and alert, and ready for business.

The question naturally arises, "Why is ventilation necessary to the successful wintering of bees?" It is true that very little ventilation would be required by the bees during winter if it were not for the moisture that is constantly being thrown off by the bees through the respiratory system; and if this surplus moisture is not speedily conducted out of the hive the result will be that the air within the hive will soon become so heavily charged with moisture that it would condense on the sides of the hive and form ice and frost, turning the hive into a veritable cold storage, causing the stores to become sour, which results in distended intestines and dysentery, and is fatal to the health of the colony.

The question that arises at this point is, "How shall we dispose of this moisture?" So far as we have been able to learn, ventilation is the only means by which this purpose can be successfully accomplished. There are two methods of applying the remedy. One is by upward ventilation by means of suitable moisture-conducting material that will gradually conduct away the moisture as fast as it arises from the bees, thus keeping the inside of the hive dry as well as the combs.

A flat cover, laid directly upon the chaff packing over the brood-chamber of a strong colony of bees, cuts off the circulation of air above the packing. This soon becomes heavily charged with moisture which is forced back into the hive, causing the packing to become damp and moldy, and a direct menace to the health of the colony; hence care should be taken to allow a free circulation of air through the chaff packing above the brood-chamber. Care should also be taken not to allow too much ventilation, either above through the chaff tray or at the entrance.

Another means of conducting away the moisture is by diffusion through an air-chamber five inches deep under the brood-chamber. In this case a sealed cover is used with plenty of packing above it, which prevents the condensing of moisture on the under side of the cover, and the humidity is diffused through the air-chamber and passes out at the entrance. In either case the entrance during winter should not exceed $\frac{3}{8}\times3$ inches. I am aware that many will take issue with me regarding the size of entrance for winter. Scientific theorists will tell us that bees require a very large entrance when wintered out of doors; but the evidence of the bees themselves, backed up by years of successful outdoor wintering with an entrance $\frac{3}{8}\times2$ inches, would seem to contradict such a theory. We believe that over-ventilation kills more bees in outdoor wintering than any other one thing. We believe that safety lies in the medium course, so we use an air-chamber under our hives five inches deep, whether wintered in the cellar or out of doors. This acts as a safety-valve, and, with the proper amount of moisture-conducting material above the brood-chamber, with an entrance $\frac{3}{8}\times3$ for outdoor wintering, we have solved the problem of moisture and ventilation in connection with outdoor wintering. No one should attempt to winter a weak colony of bees out of doors.

Having our strongest colonies prepared as above, with outside winter cases having a space of two inches between the hive and case, which is filled wilh chaff or dry sawdust and several thicknesses of heavy cloth spread over the top of the brood-chamber, and coming well down over the sides of the hive, and a tray with five inches of dry chaff or sawdust with a good water-proof cover which telescopes over the winter case, we have a certain feeling of security regarding the successful wintering of our bees, especially since we have never yet lost a colony of bees that we prepared in this way except by starvation. Bees that go into winter quarters in the above condition will need no further attention until time to prepare for next season's harvest.

Birmingham, Ohio.

[We almost feel that what our correspondent says on the size of entrances for outdoor-wintered colonies should be put in italics. At all events, what he says on the subject has been verified over and over again in our apiaries; but one must see to it that these narrow openings are kept clear of dead bees during the winter.—ED.]

SECTIONAL HIVES.

Their Advantages and Disadvantages.

BY R. C. AIKEN.

[When Mr. Aiken wrote this article he had not seen the article by J. E. Hand, page 844, wherein he describes a method of finding queens in divisible-brood-chamber hives without handling frames; nor had he seen what J. A. Green wrote on the same subject, page 951. The fact that he confirms the statement made by the other two goes to show queen-hunting can be simplified.

Incidentally it may be observed that Mr. Aiken agrees in the main with what others have said on the subject of divisible-brood-chamber hives.—ED.]

Since the shallow-frame divisible-chamber hive is under discussion I feel that I may take a hand in it too. I am not by any means new to the subject, nor am I without a large experience, having used such hives for many years, and that extensively, and of various styles and plans.

I began the study of divisible-brood-chamber hives with the writings of Heddon; followed quite minutely all that he wrote on the subject, and the discussion as participated in by others.

DIMENSIONS.

About the year 1890 I did much thinking and studying on a hive and system by which to apply the ideas I had gained. In all the years since, I have not ceased to study the subject and to experiment and read. My interest has been so great that, in looking over the journals, when any thing on the subject appeared it soon took my attention and was sure to be read. For the past fifteen years I have never been without such hives, and probably not a year that I did not handle nearly if not quite 50 colonies, and sometimes as many as 100 or more. This experience has been with frames 6×13 inches, 5×16, and 4¼×17, the first named predominating until lately, when I adopted the 5×16 as my standard.

As for the number of frames to the hive, I have tried 8, 9, and 10, settling on the 8 as standard — reasons later. So far as my experience has gone, the main part of it has been with the 8 and 9 frame widths. I have used both the 8 and 10 for comb honey, and the 9 for extracted. All these have been closed-end standing frames, and all so made that it made not one whit of difference which side was up, and to-day I have great numbers of these frames that it would take close inspecting to tell which was originally the top side.

REVERSIBLE FRAMES.

These were much discussed some years ago, and a multitude of devices invented to facilitate the reversing act. Even *hives* were made to be reversed chamber by chamber, thus turning upside down the whole body, and I also took a hand in devising reversible hives, but in only a very limited way, carrying the idea to the super with the view to having the sections built solid to the wood all around. In brood-chambers, when once a set of combs has been built complete it can be reversed thereafter as much as one desires; but with the divisible-chamber hive there is nothing to be gained in reversing a whole set of combs—at least, nothing of importance except to get the combs built out solid to both top and bottom bars; and this can be so easily done by alternating, and by turning frames upside down when manipulating them singly, that there is no necessity whatever to have the hive-body reversible. As for the super, when the sections have reached the stage where they can be reversed with safety it is about time to take them off. Only a small per cent of the sections will be at the point desirable to invert at the same time. Reversible hives and supers are not feasible, nor are they needed.

To get combs well attached to bottom-bars, if they are placed in an upper chamber it will soon be done. The divisible-chamber hive is frequently alternated. What was for a time the bottom one will become the top, and the top one at the bottom, so it comes to pass that soon all combs are built to the bottom-bars — at least a large part of them are. But as we want to manipulate frames *sometimes*, when one has a frame in his hand it is a very easy matter to return it to the hive the other side up, and then it is sure to be built up solid to the bottom-bar, which now becomes the top. Frames completely filled with comb are desirable for several reasons. In deep or Langstroth frames it is desirable to have the all-around attachments to give greater strength to guard against breakage; but unless the combs are used in an upper chamber, or full sheets of foundation used, the great majority are not attached below, or but partially so. With the divisible-chamber hive with its shallow frames there is not so much danger from weak combs dropping out or breaking down from any cause, yet they are almost certain to be almost completely attached, and no foundation used either.

LOOKING FOR QUEEN-CELLS IN A SECTIONAL HIVE.

It is commonly understood that, in the vacant space between the comb and bottom-bar, is where to expect many queen-cells when such are being built. The choice place for building cells is in breaks or rough places near the center of the brood-nest or well among the brood; but if such places are not to be found, the edges and ends of the combs are the next choice. With sectional hives the great bulk of queen-cells will be from the lower edge of the upper-chamber combs (that is, a chamber higher than the bottom-board), with their points sticking down between the bottom-bars of the upper set of frames, and many of them with their points between the top-bars of the body below. When a sectional brood-chamber is opened at the midlle, if queen-cells can not be seen protruding, or at least not visible from beneath this upper chamber when the bees are smoked up, it is usually safe to conclude they have none. This readiness with which cells may be observed is one of the favorable points. You can quickly determine whether you will need to hunt for cells. It is not safe to cut off such cells as may be found between the bodies, thinking that will be all, for there may be (and usually are) others not observable from this point; but if cell-building is going on we are almost certain to find some as indicated above by simply opening the hive horizontally at its center. This enables one to examine for cells rapidly. If none are found we pass on to the next, and so may do several hives where we would be doing one of the deep-frame style where frames had to be handled to find out.

THE COST AS COMPARED WITH DEEP HIVES.

Many object to shallow-frame divisible hives on the ground of increased cost, because there are two parts to the brood-chamber where there would be but one with the deep frame. Well, there is probably a very little additional amount of lumber used; because, if cut from two boards, there will be a little more waste; but a cheaper grade of lumber can be used which will offset the trifle of a few square inches more used.

As for the two sets of frames as against the

one set of deep ones, these shallow standing frames have very little more lumber in the two sets than is used in the one set of deeper ones. The top and bottom bars are much lighter, and also much more simple, and require less work or complicated machinery to make. A few more nails are used, but not enough to add two cents to the cost of a hive. When the whole hive is considered it is less complicated and of fewer pieces than the regular Dovetailed hive, except in the matter of frames; and the hive for equal capacity need not cost to exceed ten cents more than the standard. It ought not to cost any more, and will not if properly made.

But here is a fact commonly overlooked in comparing cost. Almost every one looks at the first cost of fixtures and not at the running expense. An ox team with the yoke and an old worn-out or otherwise cheap plow is much cheaper than a plow of best make, and new, and drawn by a good team of horses; but who would think of hiring a man at a cost of $1.50 a day to operate the ox outfit? The running expense would soon make the ox team by far the more expensive. A divisible-brood-chamber hive is but very little if any more expensive as to first cost; and when it comes to the operating it is cheaper.

If it were necessary to handle the frames one by one in the two-chamber hive as often as in the deep style there would be a serious objection in that point; but the handling of frames is reduced to a minimum, and that objection does not hold. When it comes to the question of hunting for queens the apiarist is not practical or bright in his profession if he finds it necessary to hunt through the two sets of combs for them except in a small per cent of cases. It is possible with queen-excluders, with a judicious use of smoke, or with common-sense judgment, to find nearly every queen without handling more than one set or part of one set of frames. It is also possible to make examination, and determine many things about condition, with the least exposure and time. This hive requires no more outlay of cash to purchase and operate than does the standard hive, and it gives a number of advantages not found in the others.

WEAK POINTS OF SECTIONAL HIVES.

If the hive be used in two sections there is a strong tendency to build a row of drone-cells between the two sets of frames. These to some extent tie the two bodies together, yet not so much so as to make it hard to separate them. I admit this makes some little annoyance, but it does not occur at all times, and is aggravated by a crowded condition. I have never found it a serious matter by any means in many years of practice. If the hive be used three sections deep, there is also some disposition to build store-cells between the parts; but this will not be serious if the management is right.

The real facts are, that, even with the common hive and modern L. frames, to let a colony get too badly crowded will cause the building of comb around the ends and above the top-bars, and even beneath the bottoms of the frames until it is almost impossible to remove them. The frame I use and the one I recommend for the sectional hive is a closed-end standing one. With such a one there is never any building around the ends. The building between bodies is a slight objection; but, as indicated above, an intelligent and proper use and manipulation with a proper spacing reduce that to a very small consideration.

About the only other weak point is the larger number of frames to contend with; but that, too, ceases to be at all serious for all of the ordinary brood-chamber manipulations; and it is the question of the *brood-chamber* we are considering. That is the part that is attacked by the critics. The apiarist may arrange his surplus fixtures to suit his notion. If producing extracted honey he can use deep frames if he wishes, but, of course, the objection would be raised of two sizes of frames. I do not by any means advocate this, and believe all would be better to have but one frame. To extract from shallow frames does make extra handling of parts, and would be an objection; but the majority produce comb or section honey, and with all such the objection does not hold. As for the production of extracted I expect to treat that subject in a subsequent article, and from another standpoint, so I pass it here.

There have been many changes in the past few years in both methods and appliances, and few would think of going back to the old lines; but while this is a fact, and well, yet it sometimes happens that, with improved appliances, we may better apply old-line principles in a new way, and be the gainers thereby. Why should we think it strange if, with the divisible-brood-chamber hive, or some other modern appliance, we would simplify modern practice?

When I was a boy the mowing-machines we used on the farm were heavy and both crude and complicated as compared with the ones now in use; we compare the old and the new, and wonder why we did not think of the ideas used in the new—they are so simple. We want to simplify hives and methods. The old appliances taught us many things, and now that much more of the nature and habits of the bee is known we can shorten and simplify methods and get better results.

Loveland, Col.

In a former issue we alluded to the newspaper *furore* over the death of a boy, alleged to be the result of a bee-sting. Our representative in Philadelphia now informs us that the report of the *post mortem* by the doctors of Frankford hospital has been issued, and the finding is that the immediate cause of death was cerebral tetanus, and that the sting of the bees had nothing to do with it.

TWO QUEENS IN ONE COLONY; ITS BEARING ON THE SWARMING QUESTION.

I have been much interested in the "two queens in a colony" discussion. I ran a colony last summer this way: I put queen-excluding zinc between the first and second story, with a queen in each story. They made one of the strongest colonies that I have ever seen, and did not offer to swarm. Before uniting queens I think we must make them acquire the same odor. I use some window-screen between for the first twenty-four hours.

Before I used the two queens in one colony I took a queen, confined her in a mailing-cage without attendants or food, and then introduced another queen. For three weeks they fed her through the screen, and at the end of that period she was as lively as ever, while the free queen was working as usual. This convinced me that the workers would accept two or more queens—any way, if the queens were separated, so I put queen-excluding zinc between, thinking that one queen in each story would bring about the same results as two loose in two stories—that there would be quite a saving of heat for hatching purposes, hence a larger field force would be put out.

I have been trying to think of some reason why two queens would influence swarming. It seems to me that the "piping" sound of the old queen when the young queen is about to hatch is mournful enough to indicate that she does not want to leave her happy home. Perhaps when there are two in a colony the workers can not decide which one they want to go with, or perhaps each queen is bound to stay just to spite the other. I might mention that I tried to winter my big colony in two stories, but the bees all went up into the upper story and let the lower queen die. The lower queen was the younger. J. A. YEOMANS.

Spokane, Wash., June 29.

PERFECT WINTERING OF BEES IN AN UP-GROUND BUILDING WITH SMALL ENTRANCES.

I have a way of wintering bees that is very much different from the various ways some have described. I winter without loss, unless from starvation, in a building above ground, 28×20, ceiled overhead, with loft filled with hay. I set posts on the inside on three sides, and pack with straw 18 inches. I cover each hive on the back side and top with newspapers. I pack with clover straw, four to five inches—bottom, top, and sides—leaving the front without protection of any kind. When I put them in I reverse all bottoms from wide to ⅝ bottom entrances. This retains all the heat, and I have found, from a number of years' experience, that it gives them ample ventilation. Dead bees never in any way nor at any time clog the entrance, from the fact that the bees do not die in sufficient quantity to do so. If it is very cold, the cluster will move to the back of the hive, where it is warm. If the temperature rises the bees will come to the unprotected front, where it is cooler, but never come outside. I leave the entrances open. Bees do not cover the floor as they did when I wintered in the cellar. The reason that a colony will live through the winter in this climate, in a hollow tree, is that the different thicknesses of rotten wood in a tree will give them a place to keep warm or keep cool as they may desire in their home. I did not lose any bees during the cold winter that was so disastrous to this business in Wisconsin. The unprotected side of my building I keep closed to make it dark inside. P. W. MAXWELL.

Hudson, Wis.

[This kind of building is something like the Boardman illustrated in the A B C of Bee Culture. It has the advantage of being perfectly dry at all times; and when the weather is cold enough to keep down the temperature it serves the purpose nicely.

We note that our correspondent packs each hive thoroughly, except at the front, and, what is more, uses *only a ⅝-inch entrance*, and yet he "winters without loss." There are not wanting facts to show that wide deep entrances, or bottoms of the hives off entirely, are too much of a good thing in indoor wintering. Our best wintering in the cellar has come from small entrances, although it is only recently that we have begun to grasp the fact.—ED.]

WINTERING IN SINGLE-WALLED HIVES; A PROTECTION MADE OF CLOTH DIPPED IN LINSEED OIL.

I have thought of a way of wintering bees that I would suggest as practical to the beekeepers who are living close to Mason and Dixon's line. It is this: I propose to have a canvas covering or hood about one inch square larger than the hive cover, and oil the same with boiled linseed oil, colony to have 30 lbs. of surplus in each hive. Lay ten or twelve thicknesses of newspapers over the top of the hive and sides, then pull this canvas covering down over the hive and let it extend clear to the bottom-board, and tied securely. I think that colonies so fixed would winter without cellar or straw hives here.

Philadelphia, Pa. GEO. M. STEELE.

[Canvas would be somewhat expensive. Oiled manilla paper would be just as good, and, while not as durable, would be cheaper, and, when unsuitable, new ones could be made. The principle of the plan in either case is good.—ED.].

A CONCRETE CELLAR WITHOUT A DRAIN.

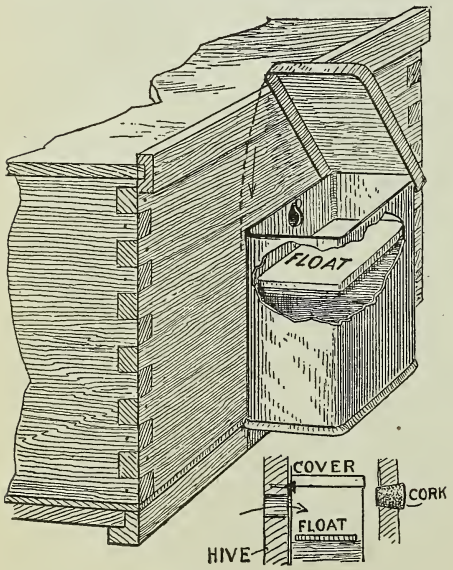
My bee-cellar is under the dwelling-house, which is 20×30. I put in a concrete floor, about 8 in. thick, and concrete walls 3 ft. high, 4 in. thick inside the stone foundation. This was sufficient to keep out the water. Before I put in the concrete there was usually about 2 ft. of water in the cellar in the winter months. Now I have a cellar that is dry, and lots of moisture outside the walls, and the bees get all the moisture needed.

January came in mild here, taking away all the snow. On the 6th the bees which were packed outside had a fly; and, although it was like a summer day, the cellar stood at 44 degrees. Before the snow went, the cellar stood at 46, so you will see that the water that came around the walls lowered the temperature 2 degrees just at a time when it was most needed. If I were building another cellar I would have it exactly the same as this one. Chris. Grimoldby.

Owen Sound, Ont.

A CAN FEEDER ATTACHED TO THE BACK OF A HIVE.

I have been using a bee-feeder which I like better than the Alexander, for three or four reasons. They are much easier to put on; rain does not fill them up with water; easier to take off if a swarm issues and you have to move the hive, and they do not incite robbing like the others. I have been experimenting some by feeding from 50 of these and 50 of Alexander's. I can feed at any time of day with these, and all goes well; but by the time I have put the feed in 15 or 20 of the other the apiary is in an uproar. I made mine from cast-off asparagus-cans, which hold about a quart before the hole is cut. To use them, bore a ¾-inch hole in the rear end of the hive or super, and drive a small nail nearly up, just above the hole, to hang feeder on. These holes are very convenient to have for mating queens on the Alexander plan, and also for ventilation on hot days. I keep corks in them when not in use, of course. Feeders made like this should be coated inside with paraffine, propolis, or wax, so the bees can crawl up and out without slipping If made of zinc, like the excluders, they ought to last a lifetime. If excelsior is used in these feeders no waxing or float is necessary. D. R. Keyes.



Montgomery, Ala.

[We illustrated a feeder on much the same principle a couple of years ago. One objection to metal feeders is their coolness, especially when put outdoors. A feeder of this kind could not be used in chilly or cold weather, as the bees would not go into it.

Beeswax would be better than paraffine, as it would not present as slippery, not to say oily, surface as paraffine.—Ed.]

SECTIONAL HIVES; THE HEDDON PATTERN USED FOR TWENTY YEARS.

I have used the Heddon hive for 20 years with 20 to 60 colonies. I have used the Danzenbaker hive one year, but as yet I don't like it as well as the Heddon, as I often close the Danzenbaker without putting back all parts, springs, wedges, and division-board or follower. The Heddon has no loose pieces to look after, and I think it is a No. 1 hive for some things. If you wish combs drawn out before the honey-flow starts for sections to be put on, just raise up one section of the hive and place a new section between with full sheets of foundation, and see how soon they will be built out into combs; and if you wish increase I don't know of a better hive, as a set of these new drawn-out combs and a section of the old hive make a swarm soon ready for work. In most cases it could be done without moving a frame; but I like to know which hive the queen is in, and give the queenless colony a choice cell or a frame of eggs from my best queen.

I think J. E. Hand's articles should have started a little sooner. S. Heath.

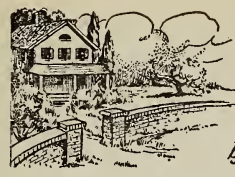
Tidal, Pa., May 30.

MISTAH HONEY BEE.

No one's makin' speeches
'Cept de honey-bee;
De principles he teaches
Sounds right sensible to me.
He says: "Keep lookin' fo' de sweets
Dat's growin' eb'rywhere;
An' if some no-'count weeds you meets,
Pass on an' don't you care."

As he comes a-bringin'
De goods f'um roun' de farm,
He says: "A little singin'
Ain gwinter do no harm;
I tells you, lots of us would get
Mo' joy f'um life if we
Kep' follerin' de sample set
By Mistah Honey Bee.

—*Washington Star.*



OUR HOMES

by A. I. ROOT

The spirit of Elijah doth rest on Elisha.—II. KINGS 2:15.

I wonder if the teachers of our land realize the extent to which the impress of their characters and spirit is left on their pupils. Do our great teachers *recognize* the tremendous responsibility that rests upon them as they stand before their pupils? In speaking of the way in which Prof. Cook has been the means of impressing his many pupils with the spirit of the man himself, I have been thinking of other great teachers whom I have known. When I was about twelve years old, circumstances made it convenient to send me to a high school in Wellsville, Columbiana Co., Ohio. I was then full of enthusiasm for chemistry and electricity, but I did not "like" grammar. I shall always remember the kind lady, Mrs. Udell, who took me in hand; and under her gentle guidance and exhortation I not only learned to love grammar, but at the end of the term I stood at the head of my class. Who can tell how much this kind act on her part has been worth to me in editing a public journal like this for so many years?

When the winter was over, and I had returned to my home in Medina, one of the pupils wrote me that Mrs. Udell said to the school that I had made greater progress during the previous winter than any other pupil she had. Four years later my parents decided to send me once more to the Wellsville high school. I was placed in the highest department, under the charge of the superintendent—a very different person indeed from the lady teacher of four years before. Professor Hitchcock, although a very good man in some respects, sometimes gave way to his temper, even in school. I took up geometry that winter for the first time. My teacher insisted on my repeating the problems and theorems in the exact language of the book. Now, it has been a very hard matter for me all my life to recite any thing word for word. I can give the *substance* of a sermon pretty well in my own language. Well, my teacher made fun of me before the class because I, as he put it, presumed to think I could improve on the language of the book. This was not fair, and it was not true. I would gladly have used the language of the book could I have done so without taking more time than seemed to me worth while. Later on, there was a lesson that was very hard for me to get through my head. For some reason or other I was reciting alone, and on that day I had a very short lesson. When informed that that was all I had acquired as a lesson for that day the superintendent threw the book on the floor with a bang, and declared that such short lessons would not be tolerated.

Soon afterward the winter term closed, and I went back to Medina. I was a good deal discouraged, and was almost inclined to give up geometry because I was so dull and thick-headed. During the summer I helped build a house on the old farm. As I greatly enjoyed carpenter work with my father for my teacher, I did a great part of the house-building. An expert carpenter was employed, however, to do the more particular finishing work, and he gave me some excellent hints. When I told him my trouble with geometry he advised me to be sure to take a winter term under S. G. Barnard, who was just opening a normal school in Medina for teachers. I called on Mr. Barnard and told him my troubles about geometry, etc. He gave the boy of sixteen a kind and friendly talk—a talk that I shall remember to the last day of my life. He said that, while it was desirable to have the pupil give the language of the book where it came natural and easy for him to do so (as it *is* a good thing), yet he added that he would give more for a boy who could show the teacher in his own language that he understood the lesson than one who learned to repeat the words of the book without a full understanding of what the words meant. I think there were about a dozen that winter in our geometry class, and there were two in that class who rather excelled. If you will excuse me for saying so, I will say I was one of the two, and the other was Professor Hendrickson, who has been all his life in the employ of the government—a man of great education and ability. Mr. Hendrickson not only understood mathematics, but it seemed an easy matter for him to quote the exact language of the book.

Mr. Barnard was a great teacher. The carpenter I have referred to gave me an illustration. Previous to coming to Medina Mr. Barnard taught in a smaller town. Before his term was out, somebody started a report that he spent a good deal of his time on the streets, even while the school was in session. The board of directors at one of the meetings took him to task. He quietly asked the committee if the pupils were not making good progress. They looked from one to the other, and finally admitted that the children had never learned so fast before, to their knowledge.

"Well, gentlemen, have any of the pupils made any complaint of their teacher?"

They looked at each other again, and finally admitted something like this:

"Our pupils never loved a teacher before as they love you. They all seem anxious to get to school on time, and they are sorry when school is out."

Then the teacher replied, "Gentlemen, it *is* true I have been out of school a good many times during school hours. It is part of my plan. It is true, as some of the gossips have said, that, instead of teaching the children, I go out of the house and leave the older and more proficient pupils in charge of the younger ones. Much of my teaching is

done by a monitor. Now, gentlemen, with your age and experience have you not learned that it requires a man of much greater ability to set other people at work than it does to do the work himself?"

If I am correct, the directors apologized, and undertook to hire him for another term; but he had other plans in view. He came to Medina and started a normal class to prepare teachers, not only for teaching, but for their lifework. Most of his pupils were from the country. They were, like myself, farmers' boys, and, like myself, many of them were bashful, awkward, and needed a wise leader in more ways than one. Some of the spry, well-dressed young clerks in the Medina stores rather poked fun at the farmer students. I think they nicknamed us "Barnard's elephants;" but, oh dear me! where are those young "counter-jumpers" now? If still alive, how do they compare with the sturdy farmer boys, strong men of integrity who fill important public offices throughout this land of ours?

Shortly after the term opened, our teacher gave us a talk in regard to our signatures. He said it was time for us to decide just how we were going to write our names. He emphasized the importance of making a signature always in the same way. He said it should be arranged as brief as possible. Then we should take great pains, not only to write it quickly but to write it so plainly that even an entire stranger would have no difficulty in reading it correctly at sight. He took our names, one after another, and put them on the black board. I do not know that *anybody* ever heard of A. I. Root before that day. It had always been *Amos Root*. He suggested that I drop the "Amos" and just put it "A. I. Root." He told me I could write it without taking my pen off the paper if I chose; and as it was a short name I could make it very plain. He took the names of the rest in a similar way, and then added something like this:

"Now, boys, do not be content with learning how to write your names plainly and well. Do not stop to put on any ornamental flourishes. Just have it plain and neat-looking, and then make it *the business of your life* to defend that name. Have it *mean* something whenever you append it to any piece of paper. Not only have the handwriting clean and plain, but make the man it represents clean and plain in every act of his life. Defend it and stand by it until there shall never be any need for you to be *ashamed* to write it or to tell the whole wide world *who* you are and *where* you live."

If my dear old friend were yet alive and could read the above words I think he would laughingly remind me that, although fifty years have passed, I am still the same chap who could never recite his geometry lesson in the language of the book; and that, although my version of his talk to his boys that morning was substantially the same thing in substance, the words were not exactly the same as he used. Every boy and girl (for there were girls there too) loved S. G. Barnard. They loved him while he lived, and I am sure I voice the sentiment of the whole school of about a hundred pupils when I say they love his memory since he has gone to his last reward. He died while I was in Florida last winter; and when I saw a notice of his death I felt regret that I had not remembered to tell him before he died that I, at least, appreciated the efforts he made years ago to start us all in wisdom's ways.

Some years ago, when traction-engines first became common, a young man at the county fair jumped off his machine while it was running, and let it describe a circle all by itself; and as it came back to where he stood he called and motioned where he wanted it to run, and it seemed like some great animal that heard and answered his bidding. I have sometimes thought that Judge Barnard's teachings were a good deal on this plan. He would call on proficient pupils, and have them hear a class recite while he attended to other duties, and every thing went on like clockwork. He had one advantage, I admit, over the teachers of our common free schools. Each pupil paid his tuition. Many of the parents worked hard to save up money to pay the tuition and other expenses of letting their boys go to that normal school. In fact, that was the case in our own home. I walked two miles and a half every night and morning, and chopped all the wood to keep up our winter fires in our humble home; but I never made such progress before nor since as I did in that one winter's time. It was the last of my schooling, when I was seventeen years old. Well, each pupil, knowing how all in the old home had raked and scraped to send him to this school, felt the obligation resting on him to improve the time. I said every thing went like clockwork; but you must not imagine from this that that miscellaneous collection of farmers' boys were above the average in manners or intelligence. At recess our teacher usually took a walk in the open air. During one of these recesses a couple of the "elephants" got to scuffling near the master's table. The table was split and one leg was broken off. The boys propped it up, and the teacher seemed to pay but little attention to it. When school opened up in the afternoon he said very quietly, "I have consulted a cabinet-maker, and he tells me it will cost 75 cents to have this table put in repair. Will the young men who caused the accident come forward and furnish the needed amount?"

Almost instantly two stalwart young farmers arose from their seats, pulled out their pocket-books, and laid the amount on the table. This being done, every thing went on as usual. I think there was no more wrestling in that schoolhouse during that winter. There were some very bright girls in that old school, and I think they are now filling noble places as mothers of families or elsewhere, every one of them. When we were on this matter of signatures the teacher gave us the names of the different young ladies for copy. Perhaps I should say right

here that I was a very poor writer indeed when I commenced at that normal school; but right *then* and *there* I practiced writing the words "A. I. Root" until people have many times since expressed surprise that I always wrote my name so neatly and plainly. Well, one day to vary the monotony a little, the teacher gave us the name of one bright and quite good-looking young lady, and he asked who in that whole school could write her name the best. This young lady and I had been getting pretty well acquainted just about that time; and after he mentioned her name I naturally looked over toward her desk. I do not know but I might as well confess that I had done the same thing several times before during the winter, even in schooltime. She, of course, was very intent on her book or slate; but as I began to fear I should not catch her eye after all, she turned her head enough to give me just one glimpse, and I bent all my energies to writing her name. I think I said to myself something like this:

"Well, now, old fellow, if you do not succeed in writing *her* name on a slip of paper in better shape than any other one in this school, it will be funny."*

I give this as an illustration to show the way in which our great teacher managed—for, dear friends, he *was* a great teacher, even if some of you who knew him did not realize it. This was only one of the many ways he had for waking us up and stirring up an honest and innocent enthusiasm to do our very best in the various lines of work. A near neighbor of ours who had also heard of Mr. Barnard's wonderful faculty asked him if he would consent to take a child just learning to read. He said he would be very glad to do so, because it would furnish an object-lesson for those who were preparing to teach; and there was a juvenile class of three—two boys and a girl—in that normal school. I think it was understood that the whole school could, if they chose, stop their lessons long enough to hear these juveniles recite. I have never, from that day to this, seen children enjoy their recitations and their school as did those three. I think Mr. Barnard enjoyed it too, and the grown-up pupils enjoyed it. It was to me a revelation of the possibilities in child culture. You will please remember this was long before kindergarten or such graded schools as we have now with proficient teachers were known. In lively contrast with such a teacher is one who scolds and frets and nags the uneasy owner of the little hands and feet because they can not keep still. I think the juvenile class of three spent a good deal of their time in the open air when the weather permitted, and they made progress I assure you.

During the fifty years that have passed since then, every little while I have come across some of Mr. Barnard's pupils; and there have been many reasons to believe, as I said before, that the drill of that one winter, to say nothing of other terms, has left its impress on large numbers of both men and women. The spirit of Judge Barnard has descended on his pupils in much the same way as, in the language of our text, the spirit of Elijah rested on Elisha. When I opened up business in Medina, Judge Barnard was a particular and intimate friend and a safe adviser. When I began to feel it was my duty to unite myself with the followers of the Lord Jesus Christ I had many an encouraging talk with him; and when our business became so large that a better system of book-keeping was demanded, I consulted him; and he not only gave me instruction but started our books in "double-entry" book-keeping; and this same system, or something equivalent to it, is carried on here to this day.

I suppose there are many whose eyes rest on these pages who have done more or less in the line of teaching some time during their lives; and not only should these thoughts I have been giving you prove to be an inspiration and encouragement to teachers, but they ought to remind the publishers of our various periodicals—men who occupy prominent places before the world, and even the fathers and mothers of families—of the way in which they are consciously or unconsciously leaving their imprint on the rising generation; and it ought to be a comforting thought to our teachers when they come to die that they have been the means, to a greater or less extent, of giving life and inspiration for that which is good and pure and holy to those for whom they have labored; and I think I can imagine no more fitting closing words than the 13th verse of the 14th chapter of the book of Revelation. Read it, and see if you do not agree with me.

"Blessed are the dead which die in the Lord from henceforth. Yea, saith the Spirit, that they may rest from their labors, and *their works do follow them.*"

* After the teacher announced that *A. I. Root's* was rather the best copy, if I remember correctly I got another glimpse of her bright face, that gave me new zeal and inspiration for my studies.

WHY WE GET SICK, AND HOW TO GET WELL.

In *Health Culture* for August I find the following:

Now, of all the causes of disease, rotting food in the stomach or intestines is the most common and the most dangerous. In fact, it is claimed by some competent physicians that no disease would be possible but for the putrefaction of undigested food. That many dangerous diseases come from this cause there is no doubt whatever. In these cases, and, in fact, in every case where one is in any state other than splendid health and energy, the food taken and the circumstances under which it is taken are matters which should receive careful attention.

There, friends, we have it. I have been for some years past coming to the conclu-

sion that, if we lived as God intended we should live, there should be no bad smell anywhere about these bodies of ours at any time, either day or night, no matter if we *are* getting to be old and gray-headed. The Bible tells us these bodies of ours are temples of the Holy Ghost; and if there is any thing on the whole face of creation that should be kept clean and pure it is these physical bodies of ours. You ask why it is, then, that we often do smell bad in *spite* of all that we can do. Well, another clipping from this same journal, I think, hits the spot very fairly. The opening article, on hay fever, contains the following:

As to diet, I may say at once that here we find as a rule the real and fundamental cause of the disorder we are studying. In severe cases, order a complete fast of from four to ten days, with free water-drinking and moderate exercise. Rest and sleep should be taken to the greatest possible extent.

The idea, given in a condensed form above, is that we either eat too much or eat food that we should know by experience does not agree with us; and the remedy is to stop eating—stop entirely if nothing else will answer. Years ago, when I was on the beefsteak diet for many weeks, all fermentation and gases in the bowels were gotten rid of, and I supposed the lean-meat diet was the only thing that would accomplish it. I have reason now, however, to think that a careful diet, with many other things, especially if we leave the table every time when we are still a little hungry will accomplish a good deal the same result. If you live on raw wheat or uncooked food, as friend Terry does, you will not be likely to overload your digestive apparatus. The reason why so many of us get sick and die is through mistaken kindness of our wives and mothers. After eating a pretty good square meal, perhaps of wholesome food, the good wife or mother says, "Oh! I have got some good pudding," or some dessert, possibly ice cream in hot weather, etc.; and although we had finished our meal, or had about finished it, we eat these other things because it might look a little surly if we should refuse to touch the dessert. I believe tempting and delicious desserts, *more than any thing else*, cause the fermentation and the bad smells. I *know*, exactly as Josh Billings said he knew that it is bad policy to tell lies —he knew by *experience*.

Now, friends, if you wish to be well, as God intended you should be—if you wish to be sweet-smelling and clean, try this plan of keeping a little hungry all the time. Of course, it makes a difference when you have hard muscular work to do. When you are taking a vacation, or when you are old enough to take things easy, be careful about eating more than you *need*, and avoid the food that you do not need and are better off without. I hardly need add, for it ought to be obvious, that you will not only make a great saving in *money*, but, what is more important, you will save the health and strength of the wife and mother, and possibly you may save the wages and presence of a hired girl in your home if you cut off all these things which are not only useless but which bring sickness and doctors' bills and untimely graves.

PABST BEER—IS IT "FOOD AND DRINK"?

In the Chicago *Daily News*, for Aug. 6th (and, we are told, in many other papers), in the advertisement of the Pabst Brewing Co. we see the following astounding statement:

The United States Department of Agriculture officially declares that beer is the purest and best of all foods and drinks.

Well, the editor of the *Home Defender* wrote to the Department of Agriculture and received a prompt reply as follows:

You are correct in assuming that no such statement has been made by the department. The department does all in its power to prevent having its views distorted, but I regret that there is no law by which such practices may be reached. Respectfully.
Aug., 1907. M. N. HAYS,
Acting Secretary, Department of Agriculture.

Well, friends, what do you think of the above from the Department of Agriculture, saying that we have no laws to prevent the brewers from manufacturing such a statement about their beer when there is no truth in it whatever?* It seems to me that our lawmakers had better get together and make a suitable law or our people will arise in their might and do something *without* law. By the way, the editor of the *Home Defender* does not tell us what the Chicago *Daily News* decided about accepting such an advertisement *after* the statement from the Secretary of Agriculture. Below is their excuse for accepting such an advertisement before they were informed what the Secretary of Agriculture had to say:

We, of course, can not refuse to accept all advertising which we can not editorally endorse; for as a publisher you are aware that the majority of the largest advertisers do not adhere very closely to the line of truth in their copy.

Well, the editor of the *Home Defender* submitted the statement of the Secretary of Agriculture to the Pabst Brewing Co., and after writing them again and again they finally secured a reply reading as follows:

With reference to the subject matter contained in same, will say that we have what we consider very good authority for making the statement in question, and expect within a few days to be in position to favor you with full information along the line requested, as well as arguments fully backing up the statements contained in our advertisement.
Trusting in the meantime you will kindly have a little patience, we are Yours truly,
Milwaukee, Aug. 14. PABST BREWING CO.

On page 1379 of last year the heading of one of these Home papers was "The Char-

---

*Permit me in a footnote to direct your attention a little more emphatically to the above statement. Notice the word *officially*. Now, this statement, no doubt, goes broadcast throughout our land. Young men who have not kept posted, but who have never touched beer, may be induced by the thousands to give it their attention, and finally become sots; and yet the Department of Agriculture thinks they can not do any thing with this villainous piece of forgery —a piece of forgery that in its results may do more harm to our youth than if this brewing company had secured *millions of dollars* by a forged name attached to a note,

acter of the Enemy we are Fighting." The above transaction gives a glimpse of the "character" of the great Pabst Brewing Co.; and it also gives us a glimpse of the way in which the hands of the Department of Agriculture seem to be tied. But better things are coming; and, may God be praised, they are coming thick and fast.

BEE-STINGS FOR RHEUMATISM.

In reply to our good friend on page 1168 of our last issue I omitted mentioning bee-stings as a remedy for rheumatism. From facts given in GLEANINGS for years past, as well as articles given in newspapers, I think there is no disputing the fact that bee-stings often prove a positive remedy for rheumatic pains and for many kinds of rheumatism. Like almost every other remedy, however, it does not seem to operate alike on all subjects. Some people, with some kinds of rheumatism, experience immediate relief. Others find themselves almost or quite free from pain the next day. It is a matter easily tested. A year or more ago I related an incident of an old gentleman in our own locality who went into an apiary and picked out and purchased the crossest colony of bees the man had, and proceeded to make the bees sting him as soon as they were his property. He said the stings were painful, but greatly to be preferred to the rheumatic pains: and he said, furthermore, that he had kept one colony of bees for several years for no other purpose than to drive away the rheumatic attacks when they came. His neighbors all corroborated his statements. Of course, we do not know how many other sufferers may be relieved or cured in a like manner. But I would suggest to every person who is afflicted with rheumatism to give bee-stings a good thorough test. It is a form of hypodermic injection older than any doctor, and both instrument and medicine are furnished ready made for use, by the great Father of all.

SELECTION OF SEED CORN FOR THE NEXT SEASON'S CROP.

On page 45 of this journal for Jan. 1 I spoke about what our Ohio Experiment Station had been doing in the way of getting a strain of corn that was not likely to be blown down by a high wind. In my hand I hold a bulletin from our station in regard to the selection of seed corn. I clip the following from page 3:

VIGOR OF PLANT.

A second character which is well worthy of consideration is vigor. While it is freely admitted that a good ear of corn is a very good recommendation for the plant which produced it, many plants produce good ears which they are unable to carry to harvest. That this character is hereditary, there is abundant evidence. In a breeding plot of last season (1906) this station had growing side by side rows planted from individual ears, one of which had 56 and another 49 per cent of its plants broken over before harvest. Between, and upon either side of these, were other rows of which, in one instance, not a single plant, and in two others, 3 and 6 per cent only, were broken. The ability to stand upright did not result from a lighter load, for the ear of which 56 per cent of the progeny broke over yielded 75.6 bushels per acre, while the ear having every plant upright yielded 114.7 bushels per acre. The broken plant presents a problem which I believe can best be solved by a consideration of the vigor and stiffness of the mother plant.

Now, friends, I fear you do not realize the possibilities that lie before you in the direction outlined in the above. How often we hear farmers say, "I should have had a magnificent crop of corn had not a terrible windstorm just about ruined it"! We have been in the habit of considering such catastrophies as unpreventable; but this report from our station tells us that more than half of the stalks from one ear of corn were broken by the wind, while an entire row from another ear of corn, that probably looked exactly like the first one, produced plants of such vigor that *not one* stalk was broken down. I talked with Prof. Holden about this matter, and he suggested that we might go too far in that direction and get a strain of corn with stalks of such vigor that they would withstand a storm and yet not produce a very high yield of ears, because so much of the growth goes to the stalk. But this bulletin from our station tells us that the row of corn with no stalks blown down yielded 114 bushels per acre, while the other one, that was more than half broken off, yielded only at the rate of 75 bushels. I presume this yield of 75 bushels was calculated from the stalks that remained standing. Now, what would it be worth to you to have your seed corn all selected from ears from that row with no broken stalks and 114 bushels to the acre? and yet it may be done. In the summary at the end of this bulletin the matter is summed up as follows:

Vigor of plant, as shown by ability to stand upright, is hereditary. Ear-rows growing side by side have shown a variation of from no broken plants to 56 per cent of broken plants.

Now, friends, it will pay you who are corn-growers to send to the Ohio Experiment Station, Wooster, Ohio, for Bulletin No. 71 on the selection of seed corn.

Right across the way from our home we have a cornfield of half a dozen acres, and I tried to make it after Prof. Holden's teachings. A friend who has just made a trip to the Norfolk exposition, and back home by way of New York, says it is the best-looking field of corn he saw on the whole trip. Of course it is rather late, as we could not get it planted in shape to suit us until after the usual planting time. I am now looking forward to the time when I can go through that field and select ears for planting next year.

SWEET CLOVER IN THE SAN LUIS VALLEY, COLORADO.

The pasture problem (for pigs) has been solved. Sweet clover, the common roadside and ditchside pest, makes a fine hog-pasture. When it is small and innocent, hogs like it. As it gets older, like some folks its nature gets tough and bitter, and nothing likes it. Therefore, plant it for your hogs; and as soon as it is six inches high, cut it down with a mower close to the ground. It will keep more hogs to the acre than any thing else; grows anywhere, in rocks, swamps, wet ground, dry ground, alkali ground, cinders, or any thing, and is the greatest ground-enricher of all the legumes.—C. A. LYMAN in *The Breeders' Gazette*.

The above is still another item for people (if there are any) who insist that sweet clover is a noxious weed.

SWEET CLOVER FOR PIGS—MORE ABOUT IT.

We clip the following from the *Kansas Farmer* of Aug. 22:

I should like information on sweet clover. Will it do well if sown in September in Oklahoma? Where can I get the seed? My land will not raise alfalfa, and I desire to get a good plant for hog pasture.
Woodward Co., Oklahoma. WM. QUEEN.

Sweet clover can be sown in the same manner as alfalfa, about the last week in August or the first week in September, and the seed-bed should be prepared as you would prepare a seed-bed for alfalfa, by thoroughly disking wheat or oats ground which is comparatively free from weeds. The disking should be done as soon after harvest as possible, and the land disked or harrowed at frequent intervals, or after each rain, to conserve soil moisture and to prepare a mellow, firm seed-beed.

Many farmers who have not been successful with alfalfa have grown sweet clover for hog pasture, keeping the clover clipped off so that it does not become hard and woody, with the exception of one crop each year, which is allowed to grow up and seed to furnish plants for the next year's crop. When grown in this manner sweet clover has proven fairly satisfactory; but it should never be grown for hog pasture where alfalfa does well. Any reliable seed-house in Kansas or Oklahoma can furnish you sweet-clover seed. G. E. CALL.

There is another point that comes in with the above; and that is, wherever you can get a catch of sweet clover you are all right for alfalfa after the sweet clover, because sweet clover is the very best agency in the world for bringing in the nitrogen bacteria to prepare the land for the successful growing of alfalfa.

Temperance.

ARE WE READY FOR ANOTHER "DECLARATION OF INDEPENDENCE"—INDEPENDENCE FROM THE RUM POWER?

The following is an extract from quite a lengthy personal letter. It is nothing new, however, and it is nothing but what might have happened almost anywhere near your home or mine. Read, and see what you think of it:

A man 19 years old, of a fine family, from Missouri, came here to work in the coal-mines. He got drunk (in a saloon, of course), and they kicked him out and he, drunk like, wanted to whip some one; so along comes the bouncer bar-tender, a bully—a kind of prize-fighter or sparring-master. He knocked the boy down, but he got up and wanted more, so that bully knocked him down and got straddle of him with his knees and went to mauling him to death. By this time a crowd gathered and cheered the murderer on, with the poor boy begging for God's sake for them to take him off. But one of the licks broke the boy's neck, so the bully left him. The boy was put in one cell and the murderer in the one adjoining (nothing between but the grating). The murderer slept all night as soundly as an innocent babe. Next morning, as they were removing the body he looked through the bars, and laughed and joked with the men. He thinks it a *huge joke*.

From what experience I have had with saloon-keepers, not only in Ohio but in other States where I have traveled, the above incident is only a fair illustration of what has been going on and would still be going on were it not for the fact that our whole nation seems to be just now waking up and getting ready for a declaration of independence from the rum power and the power of the open saloon. May God hasten the day when they may be swept from every State in the Union, and, better still, from off the face of the earth.

"BLUE EYES"—A SECOND EDITION.

More than thirty years ago there appeared in GLEANINGS, and also in the earlier editions of the A B C book, a picture entitled "Novice and Blue Eyes." Well, on the 30th day of August a kind Providence sent to Rootville a second edition of Blue Eyes. We can not exactly label it an "enlarged and improved" edition, for at the present writing the new comer is only nine days old. Novice has not yet had the privilege of taking her on his knee as he did the Blue Eyes of olden time in the picture, but the grandmother succeeded in getting her to give us several of her bewitching smiles, indicating that she was at least happy to be placed where the great Father saw fit to drop her. One of the axioms laid down by father Langstroth, if I am correct, is that, in order to have a colony of bees flourish, there should be a constant accession of young bees; and it seems to me this rule is a pretty good one for any business house or established industry. As the older ones (like your humble servant) get out of the harness, there should be younger members coming along. Here at Rootville, Ernest was the first to come on the stage (and, soon after, Mr. Calvert, his brother-in-law, and still later Mr. A. L. Boyden), just as I needed a little relief from the cares of this journal. Twenty years later Huber came along, and now there are several grandchildren tall enough to pass for men, even if they are young in years. But among all the grandchildren till this last one, there has been only one girl, Miss Mildred Calvert. For some time past I have been rather uneasy because of the preponderance of *boys* in the Root hive. I did not say *drones*, mind you—God forbid there should *ever* be any drones in our family. (Queens, of course, are *always* O. K.) So you can realize how we all thanked God, especially myself, when this second edition of Blue Eyes, little Helen Maude Boyden, came along to bear Mildred company; and just now we ought to be a very happy family praising God for what he has done for us, especially in answering our prayers.

Extra honey queens and choice mountain honey. Francis J. Colahan, Bernardo, San Diego Co., Cal.

QUEENS.—Pure Gold, Red-clover, Caucasian, Banat. ROSE LAWN APIARIES, College View, Lincoln, Neb.

ITALIAN QUEENS.—Golden and leather, 60c each; worth $1.00. G. W. BARNES, Box 340, Norwalk, O.

Bee-keepers' supplies, Italian queens. Send for a free catalog. ARTHUR RATTRAY, Almont, Mich.

ITALIAN BEES and queens—Red-clover strain imp'd mothers. A. W. YATES, 3 Chapman St., Hartford, Ct.

ITALIAN BEES, queens, and Root's bee supplies. E. SCOGGIN, Carlsbad, N. M.

I club a high-grade Italian queen with GLEANINGS, new or renewal. W. T. CRAWFORD, Hineston, La.

ITALIAN BEES and queens—red-clover and golden strains. E. A. SIMMONS, Greenville, Ala.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York City.

ITALIAN bees and queens bred for honey; price list free. B. F. YANCEY & SON, Angleton, Tex.

FINEST Golden and red-clover queens, Caucasian and Carniolan. DANIEL WURTH & GRANT, Pitkin, Ark.

ITALIAN AND CAUCASIAN bees and queens of best quality; price list free. A. E. TITOFF, Ioamosa, Cal.

MAPLEWOOD APIARY.—Choice comb honey, Italian bees and queens. GEO. H. REA, Reynoldsville, Pa. R. 2.

ROOT'S SUPPLIES at factory prices; wholesale and retail. ANTON G. ANDERSON, Holden, Mo.

ITALIAN BEES, queens, and bee supplies. H. H. JEPSON, 182 Friend St., Boston, Mass.

ITALIAN BEES, queens, comb and extracted honey. A. T. DOCKHAM, Rt. 1, Box 95, Eagle Bend, Minn.

ITALIAN BEES, queens, beeswax, honey, and bee-keepers' supplies. M. E. TRIBBLE, Marshall, Mo.

FOR SALE.—Bee-keepers' supplies. Write for catalog. Lengst & Koenig, 127 S. 13th St., Saginaw, Mich.

FOR SALE.—Golden and red-clover Italian queens. WM. A. SHUFF, 4426 Osage Ave., Philadelphia, Pa.

ITALIAN BEES and queens—red-clover and golden strains. E. E. MOTT, Glenwood, Cass Co., Mich.

SWARTHMORE Golden-all-over, Caucasian, Banat, Carniolan, Cyprian queens. E. L. Pratt, Swarthmore, Pa.

GOLDEN yellow Italian queens—my specialty. Price list free. E. E. LAWRENCE, Doniphan, Mo.

ITALIAN BEES, queens, honey, and ROOT'S bee-keepers' supplies. ALISO APIARY, El Toro, Cal.

FOR SALE.—Bees, queens, and bee-keepers' supplies (Root's goods), at factory prices. F. W. VAN DEMARK, Mehan, Okla.

FOR SALE.—Root's bee-supplies, wholesale and retail; factory prices; catalog free. Beeswax wanted. W. E. TRIBBETT, Staunton, Va.

GOLDEN-ALL-OVER Caucasian Banat bees and queens. We book orders for early queens from our best imported breeding stock for honey, with 600 twin mating-boxes. THE SNYDER APIARIES, Lebanon, Pa.

QUEENS.—Improved Red-clover Italians bred for business; June 1 to Nov. 15, untested queens, 60c; tested, $1.00 each. Safe arrival and satisfaction guaranteed. H. C. CLEMONS, Boyd, Ky.

I must say to my friends, please do not send me any more orders for queens this season, as my health is so poor I find it impossible to continue queen-rearing. Thanks to all my friends for their very liberal patronage. W. W. CRIM, Pekin, Ind.

IMPROVED ITALIAN QUEENS now ready; nuclei and colonies about May 10. Danzenbaker or L. frames; 20 years a queen-breeder; 500 colonies to draw from. Circular and testimonials free.
QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.

ANGEL'S GOLDEN BEAUTIES and his bright three-banded Italian Queens have but few equals and no superiors. A fine large queen of either strain for $1.00; an extra select breeder for $2.50. I have had 12 years' experience at queen-breeding. Address
SAMUEL M. ANGEL, Route 1, Evansville, Ind.

Convention and Fair Notices.

PREMIUM LIST FOR ILLINOIS STATE FAIR, SEPTEMBER 27 TO OCTOBER 5.

The judges in this lot will be governed by the code of rules adopted by the Illinois State Bee-keepers' Association.

Five hundred pounds only will receive full score for quantity in displays of comb and extracted honey, and 300 pounds only in displays of candied honey; 50 pounds will receive full score for quantity in display of beeswax.

Only one entry will be allowed each exhibitor for any one premium.

No.		1	2	3
2293	Display of comb honey	$20	$15	$10
2294	Collection of labeled cases containing 12 or more pounds of white honey from different flowers	8	5	3
2295	Collection of labeled cases containing 12 or more pounds of amber or dark honey from different flowers	8	5	3
2296	Case of white-clover comb honey, 12 to 24 pounds	4	3	2
2297	Case of sweet-clover comb honey, 12 to 24 pounds	4	3	2
2298	Case of basswood comb honey, 12 to 24 pounds	4	3	2
2299	Case of amber comb honey, 12 to 24 pounds	4	3	2
2300	Display of samples of extracted honey, not less than half-pound each	5	3	2
2301	Display of extracted honey	20	15	10
2302	Honey extracting on the grounds	5	3	2
2303	Frame of comb honey for extracting	5	3	2
2304	Display of candied honey	20	15	10
2305	Display of beeswax	15	10	5
2306	One-frame observatory hive dark Italian bees	4	3	2
2307	One-frame observatory hive golden Italian bees	4	3	2
2308	One-frame observatory hive Carniolan bees	4	3	2
2309	Honey vinegar, one-half gallon, with recipe for making	4	3	2
2310	Display of designs in honey	15	12	8
2311	Display of designs in beeswax	20	12	8

HONEY WANTED.

Notwithstanding repeated calls for honey, both comb and extracted, we have had very few offers. Evidently the demand is such that our readers are finding ready sale at good prices. We need honey to fill orders on file, and should like to hear from those having choice extracted or fancy, or No. 1 comb honey for sale, with description and price.

HONEY-JARS.

We have been disappointed by delay in delivery of a carload of No. 25 and Simplex jars, and, as a consequence, some orders have been delayed. Order was placed more than two months ago, and we were promised delivery early in August. As we go to press we have every reason to expect shipment to arrive within a few days, so that we can fill orders promptly when the car arrives.

THE J. E. HAND SYSTEM.

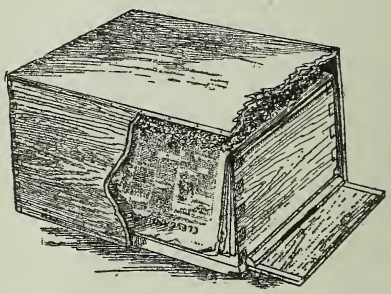
We are receiving numerous inquiries for hives and fixtures as used by J. E. Hand, and described in the series of articles which have been running in GLEANINGS for the past few months. We already list in our catalog, page 5, a sectional or divisible-brood-chamber hive which you can operate by the Hand method; besides it has the advantage of using the Danz. super with 4x5 plain sections. It does not have a movable side, but the super-springs afford the same facility in getting at the contents, for it is not often that you have to disturb the contents of a section of the hive by Mr. Hand's method. We can supply the sections split on three sides, for receiving a full sheet of foundation, at 10 cts. per 100 or 50 cts. per 1000 extra over the price of the regular style.

HONEY PACKAGES AND LABELS.

We call attention to the honey-packages, both of glass and tin, on other pages of this number; also to the inside front cover page of the July 1st issue for labels. We are offering some new designs in labels. If interested in ordering, send for complete label catalog, of which a new edition has just been completed. If you have choice honey to sell, put it on the market in neat and attractive form, and it will find readier sale.

CARTONS FOR COMB HONEY.

In casing your fancy comb honey for market you will find it quite an advantage to enclose each section in a carton before placing them in the case. Sections packed in the Danzenbaker style of carton may be packed in the regular-sized shipping-eases; but the folding cartons which entirely enclose the section require more room, and, consequently, larger cases to take them in. We are now prepared to supply cartons made from a better grade of stock and more artistic printing than the ordinary style listed in our catalog, at about $1.90 per 1000 more than the price of the regular style listed in our catalog. Send for samples with 5 cents to pay for postage on same.



TELESCOPE CAP FOR WINTER PROTECTION.

The above illustration shows a very satisfactory method of protecting bees over winter in single-walled hives. This same cover, listed as K in our catalog, is also a great protection in the fall and spring, especially the latter when bees are building up ready for the honey-harvest. We have known cases where enough additional honey was secured because of this added protection to pay the price of the covers in one season. The rim is 11¼ inches deep, and the top is covered with galvanized steel. The price, nailed and painted, is 80 cts. each, 8-frame; 85 cts., 10-frame. In flat, 62 cts. each; $3.00 for 5, 8 frame; 65 cts. each, $3.10 for five, ten-frame. Where this cover is substituted for the regular cover on a single-wall hive, a light super cover should be used in connection with it. Price of super cover is 15 cts. each, $1.30 for 10.

CHANGES IN PRICES FOR 1907–8.

Up to this time we have determined on the following changes in list prices. During the past season we have worked off our surplus stock of No. 2 plain sections so that from this date forward, until further notice, the price on B grade or No. 2 plain sections will be 25 cents per 1000 higher than the rate given in our catalog.

We cut out the dozen rate on No. 30 wire on spools, and increase the 5-lb. coils to $1.00 each.

B. P. S. paint for hives is advanced to $1.75 per gallon; 90 cts. per ½ gallon; 50 cts. a quart; 30 cts. a pint.

Painted wire cloth is advanced to 2½ cts. per foot for cut pieces; 2 cts. in full-roll lots. Galvanized wire cloth, 8 mesh, is advanced to 8 cts. per sq. ft.

The A B C of Bee Culture, very greatly enlarged and improved, printed on enameled paper, is advanced to $1.50 postpaid; $1.25 with other goods by freight or express. The new edition will not be completed till November. Half-leather editions will be $2.00; full leather, $2.50.

There has been an advance of over 30 per cent in material for bee-veils, and new prices are adopted as follows: No. 1, all silk tulle veil, 90 cts.; No. 2, cotton tulle with silk face, 60 cts.; No. 3, all cotton tulle, 50

cts.; No. 4, mosquito-bar veil, 30 cts.; bee-hat, 30 cts.; silk tulle per yd., 60 cts.; cotton tulle per yd., 25 cts.; mosquito-bar, per piece of 8 yds., 75 cts. No change in globe veil.

EARLY-ORDER CASH DISCOUNT.

This has been such a backward season that we have followed suit and been backward in announcing our early-order cash discount. We have been obliged to cut this down below that offered in former years; but it is still sufficiently liberal to pay transportation charges quite a distance, or to pay liberal interest on the money invested in supplies early, and should attract those forehanded people who know pretty well what they want for the coming season.

Before going to press with our catalog for next year we may find it necessary to make further advances in price, so that we do not guarantee present prices for the future. The small margin of profit the past season, and the increased cost of material for next season's output, warrants an advance.

The following is the schedule of discounts for early cash orders for bee-keepers' supplies, subject to the conditions below:

For cash sent in	September,	deduct	5	per cent.
" " "	October,	"	5	"
" " "	November,	"	4½	"
" " "	December,	"	4	"
" " "	January,	"	3½	"
" " "	February,	"	3	"
" " "	March.	"	2½	"
" " "	April,	"	2	"

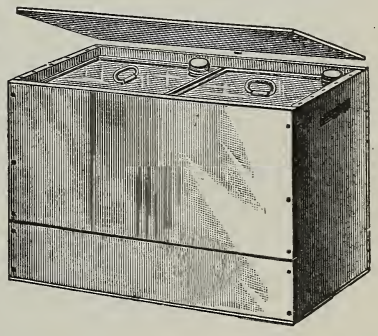
The discount is only for cash sent before the expiration of the months named, and is intended to apply to hives, sections, frames, foundation, extractors, smokers, shipping-cases, cartons, and other miscellaneous bee-keepers' supplies. It will not apply on the following articles exclusively; but where these form no more than about one-tenth of the whole order the early order discount may be taken from the entire bill: Tinned wire, paint, Bingham smokers, Porter bee-escapes, glass and tin honey-packages, scales, bees and queens, bee-books and papers, labels, and other printed matter, bushel boxes, seeds, and other specialties not listed in our general catalog.

A BARGAIN IN MUSIC.

If any of our readers know of a mission church or Sunday-school, or Christian Endeavor Society, in need of singing-books we are in a position to do them some good. We formerly sold large quantities of Gospel Hymns, and have left in stock several lots of desirable books which we will close out at about half price.

We have 51 copies of Christian Endeavor edition of Gospel Hymns No. 6, words and music, board covers, which sold at $35 00 per 100. We offer them to close out at 20 cts. each, $2 00 per doz., or $7.50 for the lot. We have also 14 copies of Gospel Hymns No. 6, which sold at $30 00 per 100. This is the same book, except that the C. E. edition has a few extra special C E. songs in it which are not in the other. We offer these at 20 cts. each, $2.00 for the lot. There are 33 copies of Christian Endeavor Songs, a later edition than No. 6, which sold at $30.00 per 100. Price 20 cts. each, $2.00 per doz., $5.00 for the lot. Postage extra in each case 5 cents each if sent by mail. Of Gospel Hymns Consolidated, Nos. 1, 2, 3, 4, words only, large-type edition, board covers, which sold at $20.00 per 100, we have 23 which we offer at $1.50 per doz., $2.50 for the lot; by mail, 15 cts. each. Small-type edition, limp cloth covers, which sold at $10.00 per 100, we have 46 copies which we offer at 80 cts. per doz., $3.00 for the lot; 8 cts. each, postpaid.

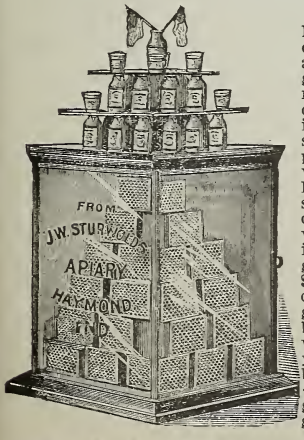
HONEY-PACKAGES IN TIN



This cut shows a box of two 60-lb. tin cans, which is the standard package for storing and shipping extracted honey. It is far superior to barrels, because there is not the same chance for leakage, or taint from the wood; and, being square, they economize space. Owing to light honey crops, the last two years, the demand has been light, and we have a good stock bought below the prices ruling at present. To reduce this stock we will ship from Medina any orders mentioning this notice, at the following special prices: One box, two cans, 80 cts.; 10 boxes, $7.50; 25 boxes or over, at 70 cts. a box. One box of one can, 50 cts.; 10 boxes, $4.50; 25 boxes or more, at 42 cts. a box.

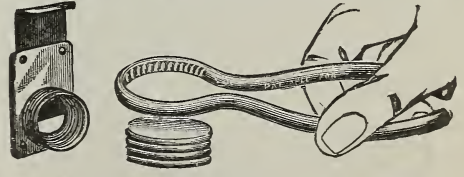
One-gallon square cans with 1¾-inch cap, 100 in a crate, at $10.00 per 100; 500 or over at $9.00 per 100; packed 10 in a case at $1.35 per case; 10 cases, $12.50.

Sturwold's Show-case.



This case is 28 in. high, 20 in. square, outside measure, top and bottom. The glass of which it is made is 16×24. The case is to be set up in any grocery, drug-store, or any other place of business where you want your honey exhibited or sold. The frame is of chestnut, filled and varnished, and finished in natural grain. Price, plain, $5; with name and address, $5.50. As the glass is very apt to be broken in transit, we will ship them, if you prefer, with glass boxed separately, at same price. In flat, no glass or finish, $2.50; glass included, $4.00.

Screw-cap Honey-gate and Can-screw Wrench.



Price 15 cts.; by mail, 18 cts. Price 10 cts ; 75 cts. per dozen. By mail, 4 cts. each extra.

We furnish the gate for 1⅛, 1⅜, or 1¾ screw. Other sizes made to order from caps you may furnish.

The wrench fits a 1¾ screw, and can be used on 1⅜ or smaller by bushing between cap and wrench.

When you order these gates separate from cans we can not guarantee a fit unless you send us a cap from the screw with the order.

Sample Mailing-blocks.

Price, each, 6 cts ; by mail, 9 cts.

These are small wide-mouthed glass bottles, which hold ½ oz., with cork, put up in a mailing-block with top which screws on and is easil removed.

THE A. I. ROOT COMPANY, :: :: :: MEDINA, OHIO

Honey-Packages in Glass

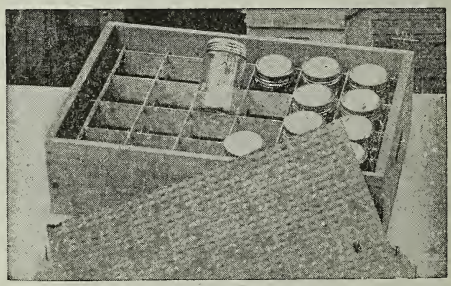
We have quite a variety of glass packages for putting up honey for retail. We mention first our

Half-pound Tumbler.

This is shown at the left with a diamond label, No. 95. These include tin cover with wax or parchment paper disk for sealing tight. No labels. Will hold 7 oz. of honey when filled; and the price, $5.50 per barrel of 32 dozen; 5-bbl. lots at $5.25. In reshipping-cases of 4 dozen packed ready to reship, when filled, $1.00 per case; 6 cases, $5.70; 20 cases or over, at 90 cents per case.

No. 25 Jar.

This holds one pound of honey; has an opal cap with rubber ring and lacquered tin screw rim which seals tight. Packed in reshipping cases of 2 dozen each; price $1.10 per case; 6 cases, $6.30; 20 cases or more at $1.00 per case.



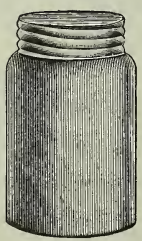
Tiptop Jar.

We keep these in two sizes, for half and one pound of honey. The shape of the jar is shown in the cut. It has a glass top, a rubber ring, and a spring-top fastener. Packed a gross in a crate at $5.00 per gross for 1-lb., or $4.50 for the half-pound size. We have them also packed in reshipping-cases of 2 dozen each at $1.10 per case for 1-lb. size; 6 cases, $5.30; 20 cases or over at $1.00 per case. Half-pound size, $1.00 per case; $5.70 for 6 cases, or 90 cts. per case in 20-case lots.

Simplex Jar.

This is one of the handsomest jars we ever handled. The factory making them was wrecked last August, and we have been unable since to secure any more of the size, which holds one pound. We can supply the next larger size, which holds 18 oz. of honey. Packed in reshipping-cases of 2 dozen. Price $1.15 per case; 6 cases for $6.60; in 20-case lots or over at $1.05 per case. We still have at Philadelphia a few cases of the 1-pound size which may be had from there while they last, at the same price as above.

Sq. Hershiser Jars.



These jars were designed for use in the honey exhibit at the Pan-American Exposition in Buffalo, and are very neat and attractive. They have cork-lined aluminum caps which seal them tight. They are made in four sizes square and three sizes round. The 1-lb. size in each style is shown in the first two cuts at the left.

¼-lb.	square	Hershiser	jars,	doz.,	50c; $5.40	per gross
½-lb.	"	"	"	"	55c; 6.00	" "
1-lb.	"	"	"	"	80c; 9.00	" "
2-lb.	"	"	"	"	1.00; 10.80	" "
½-lb.	round	"	"	"	60c; 6.60	" "
1-lb.	"	"	"	"	75c; 8.40	" "
2-lb.	"	"	"	"	1.10; 12.00	" "

The ordinary square jar to seal with cork, similar to that shown in cut at extreme left, is very largely used for honey. They are made in four sizes. The 1 and 2 lb. sizes are packed ½ gross in a package; the smaller sizes one gross. Price including corks:

5-oz.	square	jar	.....35c	per	dozen; $3.25	per gross
8-oz.	"		.....45c	"	" 4.25	" "
1-lb.	"		.....60c	"	" 5.75	" "
2-lb.	"		... . 75c	"	" 7.50	